United States Court of Appeals

for the

District of Columbia Circuit

TRANSCRIPT OF RECORD

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United States Court of Appeals for the District of Columbia

APRIL TERM, 1937.

No. 7009

194

RAY U. THORNTON, APPELLANT,

vs.

CONWAY P. COE, COMMISSIONER OF PATENTS.

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA.

FILED JULY 17, 1937

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United States Court of Appeals for the District of Columbia

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United States Court of Appeals for the District of Columbia

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a In the District Court of the United States for the District of Columbia

No. 58120 In Equity

RAY U. THORNTON, *Plaintiff,*

vs.

CONWAY P. COE, Commissioner of Patents, *Defendant.*

UNITED STATES OF AMERICA,
District of Columbia, ss:

BE IT REMEMBERED, That in the District Court of the United States for the District of Columbia, at the City of Washington, in said District, at the times hereinafter mentioned, the following papers were filed and proceedings had, in the above-entitled cause, to wit:—

1 *Bill of Complaint*

Filed December 31 1934

In the Supreme Court of the District of Columbia

No. 58120 In Equity

RAY U. THORNTON 136 River Road, New Bedford, Mass., *Plaintiff*

v.

CONWAY P. COE, Commissioner of Patents, *Defendant.*

To the Honorable
The Judges of the Supreme Court
of the District of Columbia.

Ray U. Thornton, a resident of New Bedford, in the county of Bristol and Commonwealth of Massachusetts, plaintiff, brings this his Bill of Complain against Conway P. Coe of Washington, in the District of Columbia, as he is the Commissioner of Patents in the United States; and thereupon plaintiff complains and says—

1. This is a suit in equity arising under the patent laws of the United States and particularly Section 4915 of the Revised Statutes (U. S. C., title 35, sec. 63) as amended March 2, 1927 (44 Stat. L. 1335) and March 2, 1929 (45 Stat. L. 1476). Defendant is the Commissioner of Patents, having his office within the District of Columbia and is officially a resident of said District of Columbia.

2. That on or before July 12, 1932 plaintiff, Ray U. Thornton, being a citizen of the United States and resident of New Bedford, in the county of Bristol and Commonwealth of Massachusetts, and being the first,
2 true and original inventor of certain new and useful
Improvements in Section or Warper Beams not known or used by others in this country before his invention or discovery thereof and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application for Letters Patent Of the United States, hereinafter mentioned, or patented to himself or to others on any applications for patents filed in any foreign country by himself or his legal representatives prior to his said application in the United States and not in public use or on sale in this country for more than two years prior to his said application and which he had never abandoned to the public, the said Ray U. Thornton on said 12th day of July, 1932 made due application for Letters Patent of the United States for said invention, which application was given by defendant, the Commissioner of Patents, Serial No. 622,059.

3. That said application Serial No. 622,059 for Improvements in Section or Warper Beams having been filed July 12, 1932, as aforesaid, the Commissioner of Patents On December 12, 1932 and at various times thereafter, rejected said application for reasons stated in the several letters of said Commissioner, and that within the time allowed by the Statutes in such cases made and provided plaintiff, by his attorney, made due replies to said Letters of the Commissioner of Patents; that on April 17, 1934 the Commissioner of Patents by the Primary Examiner in charge of said application, finally rejected claims 9 and 10 of said application; that on or about April 26, 1934 the said Thornton by his attorney appealed from the decision of the Pri-

mary Examiner rejecting the said claims 9 and 10 to the Board-of-Appeals of the United States Patent Of-
3 fice; that on July 3, 1934 the Board-of-Appeals of the United States Patent Office affirmed the decision of said Primary Examiner.

4. And defendant has refused and is now refusing to grant unto plaintiff a patent for plaintiff's said invention as stated and covered by the claims appended to this Bill of Complaint and made a part thereof, all as will more fully appear from a certified copy of said application Serial No. 622,059 and of the proceedings in the Patent Office, ready here in Court to be produced and of which profert is hereby made.

Wherefore, plaintiff prays that this Honorable Court adjudge that plaintiff, the said Ray U. Thornton, is entitled according to law to receive a patent for the invention or inventions as specified in the claims appended hereto, or for such part or parts thereof as to the Court may seem meet, and that the Commissioner of Patents be authorized and enjoined to issue to the said Plaintiff a patent in accordance with the decree of the Court upon filing in the Patent Office a copy of said decree and otherwise complying with the requirements of law. And, the plaintiff further prays for such other and further relief as to the Honorable Court may seem meet.

RAY U. THORNTON

GEO K WOODWORTH
WM. L. EDMONSTON
Solicitors and of Counsel.

COMMONWEALTH OF MASSACHUSETTS
County of Bristol, ss:

Ray U. Thornton having been duly sworn deposes and says that he has read the foregoing Bill of Complaint, by him subscribed, and knows the contents thereof and that the same is true of his own knowledge.

RAY U. THORNTON

Subscribed and sworn to before me this 27th day of December, 1934.

SAMUEL BARNET
(Seal) *Notary Public*

4 9. A section beam comprising a shaft, a barrel and a pair of heads mounted on said shaft, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter and in threaded engagement with said shaft, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel, and means for locking each said disc against axial movement with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.

10. A section beam comprising a barrel, a shaft passing through the same, and a pair of heads mounted on said shaft, the ends of said shaft extending beyond said heads, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel, and means for locking each said disc against axial movement with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.

Exhibit "A"

5 *Answer to the Bill of Complaint.*

Filed January 17 1935

* * * * * * * * *

To the Honorable
The Judges of the Supreme Court
of the District of Columbia.

Conway P. Coe, Commissioner of Patents, defendant herein, in answer to the Bill of Complaint alleges on information and belief as follows:

He admits for the purpose of this suit the allegation of residence of the parties hereto.

1. He admits the allegation of jurisdiction under Section 4915 R. S.; 35 U. S. C. A. 63, as amended.

2. He admits the allegations of invention and the non-existence of statutory bars in so far as they apply to claims 1, 2 and 3 that have been allowed, but denies that

plaintiff is entitled to an allowance of claims 9 and 10, as more fully appears from the statement of the examiner and the decision of tthe Board of Appeals, copies of which will be presented at the hearing. He admits that plaintiff Ray U. Thornton, in the 12th day of July, 1932, filed an application for letters patent in the United States Patent Office to which Serial No. 622,059 was given.

3. He admits that claims of said application 622,069 were rejected at various times, that the rejection was made final on April 17, 1934, and that appeal was taken from that rejection to the Board of Appeals, which Board of Appeals on July 3, 1934, rendered a decision affirming the decision of the primary examiner.

4. He admits that plaintiff has been refused a patent for the invention covered by claims 9 and 10 recited in Exhibit A appended to the Bill of Complaint.

6 Further answering defendant denies that plaintiff is entitled to an allowance of claims 9 and 10 as they are held to be unpatentable over the following prior art:

Marcy,	455,224,	June 30, 1891,
Peterson,	1,484,154,	Feb. 19, 1924,
Taft,	1,490,864,	Apr. 15, 1924,

Copies of these patents will be presented at the trial.

Wherefore defendant having fully answered the Bill of Complaint denies that plaintiff is entitled to the relief demanded or any part thereof and prays that the Bill be dismissed with all costs of the proceedings against the plaintiff as provided in Section 4915 R. S.

CONWAY P. COE
Commissioner of Patents,
Defendant.

T. A. HOSTETLER,
Solicitor of the U. S. Patent Office,
Attorney for Defendant.

DISTRICT OF COLUMBIA, *ss:*

I, Conway P. Coe, Commissioner of Patents, depose and say that I have read the above answer by me subscribed and know the contents thereof, and that the statements of fact therein made as upon personal knowledge are true, and those made upon information and belief I believe to be true.

CONWAY P. COE
Commissioner of Patents.

Subscribed and sworn to before me this 16th day of January, 1935.

ALBERT W. KAISER
(Seal) *Notary Public, D. C.*

My commission expires March 21, 1938.

---

7 *Findings of Fact.*

Filed June 3—1937

* * *

1. This suit, brought under the provisions of Section 4915 R. S. (U. S. C., title 35, sec. 63), involves an application filed by Ray U. Thornton for a patent on a Section or Warper Beam. The suit involves two claims, 9 and 10, claims 1, 2 and 3 having been allowed.

2. The said application of Ray U. Thornton relates to improvement in "Section or Warper Beams". The claims in suit, Nos. 9 and 10, relate primarily to the stiffening members, the allowed claims relating to other features. The warper beam is of the general type shown in the patent to Thornton, No. 1,239,744, referred to in the application in suit. It has a barrel with heads at each end thereof, and a shaft longer than the barrel and passing through the heads. As shown in Fig. 3 of the drawing of the application, a stiffening member is provided for the purpose of preventing the spreading of the heads when the beam is filled with yarn. The spreading member consists of a concave steel disk threaded on the shaft with its convexed surface outward with respect to the head. It is stated in the specification that this disk is "slightly larger in diameter than the barrel" and by turning the disk against the head with the necessary force the spreading of the outer peripheral portions of the head is prevented, the disk then being held in adjusted position by a lock member.

3. The patent to Marcy, No. 455,224, discloses a jack spool for mill use. This spool is shown as having a barrel

and two metal heads and is so formed as to receive in each end the spindle, forming the gudgeon to the spool. On this gudgeon there is threaded a concave washer which, by securing the spindle into a nut fastened in the opening in the head is brought firmly against the head. As
8 shown in the drawing, the diameter of this concave washer is slightly greater than the diameter of the head.

4. The patent to Taft, No. 1,490,864, also shows a jack spool having heads at each end attached in a manner similar to that of the attachment in the Marcy patent and also provided with a bearing plate which is dished and which bears against the heads.

5. The patent to Peterson, No. 1,484,154, discloses a warp beam having a wooden barrel and metal heads. In order that the heads may be effectively braced against the pressure of the yarn load, a concave bracing disk of slightly smaller diameter than the head is disposed at each end of the barrel. Each disk is secured by a nut on the shaft and is secured at its outer edge to the metal head by spot welds.

Conclusions of Law.

1. Claims 9 and 10 define no invention over the prior art, as illustrated in the three patents to Marcy, Taft, and Peterson.

2. Plaintiff is not entitled to a patent on his said application containing claims 9 and 10.

3. The bill of complaint should be dismissed.

DANIEL W. O'DONOGHUE
Justice.

Final Decree.

Filed June 3—1937

* * *

This cause having come on to be heard and having been tried in open court and argued by counsel for the respective parties upon the pleadings and proofs adduced and submitted to the Court, 9 It is Adjudged, Ordered and Decreed this 3rd day of June, 1937, that the bill of complaint in this case be, and the same hereby is dismissed, with costs against the plaintiff.

DANIEL W. O'DONOGHUE
Justice.

Approved as to Form:
GEO. K. WOODWORTH,
Attorney for Plaintiff.

From the foregoing decree the plaintiff, Ray U. Thornton, in open court on the date named above, notes an appeal to the United States Court of Appeals for the District of Columbia, and the Court fixes the cost bond on said appeal in the sum of $100, or in lieu thereof the sum of $50 in cash to be deposited with the Clerk of this Court.

DANIEL W. O'DONOGHUE
Justice.

Memorandum

June 9—1937.
$50 deposit in lieu of Bond on Appeal.

Assignment of Errors

Filed June 9—1937

* * *

Now comes the plaintiff-appellant and in support of his appeal asserts that the Court erred in the following particulars, to wit:

1. In finding that the concave discs of appellant's application S. N. 622,059 are slightly larger in diameter than the barrel or beam;

2. In failing to find in accordance with the evidence that the concave discs of appellant's application S. N. 622,059 are substantially larger in diameter than the barrel or beam;

10 3. In finding that the Peterson patent No. 1,484,154 discloses a warp beam the heads of which may be effectively braced against the pressure of the yarn mass by a concave bracing disc of slightly smaller diameter than the head;

4. In failing to find in accordance with the evidence that the bracing disc 3 of said Peterson patent, the main disc 1 thereof, and the spacing sleeve 8, constitute, respectively the compression member, the chord or tension member, and the strut of a truss construction, the said members being rigidly interconnected whereby said truss construction may have the strength of a solid cast iron head, and accordingly said bracing disc is not the equivalent of appellant's disc 27.

5. In not holding that said Peterson patent is entirely irrelevant to the issue raised by the pleadings and teaches nothing that would assist one skilled in the art to produce the invention defined by claims 9 and 10 of appellant's application;

6. In failing to find in accordance with the evidence that the washers and bearing plates of the Marcy patent No. 455,224 and the Taft patent No. 1,490,864, respectively, might be made larger in diameter than the barrels or cylindrical portions of the jack spools disclosed in said patents without altering the mode of operation of the respective devices or changing the results sought by the respective patentees;

7. In finding that the diameter of the Marcy concave washer is slightly greater than the diameter of the head;

8. In failing to rule in accordance with the law that the illustration of said washers and bearing plates of said Marcy and Taft patents, respectively, as slightly larger in diameter than the barrel or cylindrical portion of said jack spools is a mere accidental showing;

9. In combining the Peterson patent for a warp beam with the Marcy and Taft patents for jack spools as the
11 basis of a ruling that claims 9 and 10 of appellant's application define no invention;

10. In failing to find in accordance with the evidence that the gudgeons projecting from the ends of the jack spools of the Marcy and Taft patents are not the equivalent of the shaft extending through appellant's warp beam;

11. In failing to find in accordance with the evidence that the design and construction of the jack spools disclosed in the Marcy and Taft patents do not present the problems confronting the designer of a warp beam or afford any in-

formation that would be useful in the construction of a warp beam;

12. In failing to find in accordance with the evidence that appellant's claims 9 and 10 are differentiated as a matter of terms from the Marcy and Taft patents in that the latter do not disclose the combinations claimed in said claims;

13. In failing to rule in accordance with the evidence that the said Peterson patent discloses no element that is the equivalent of any element in either the Marcy or Taft patent and that might be substitued for anything in either of the latter;

14. In failing to find in accordance with the evidence that if the concave bracing disc of the Peterson patent were made independent of and separable from the main disc thereof, the head of the Peterson warp beam would be rendered inoperative and ineffective for its intended purpose;

15. In holding in paragraph 1 of the Conclusions of Law that claims 9 and 10 of plaintiff's application S. N. 622,059 define no invention over the prior art, as illustrated in the three patents to Marcy, Taft and Peterson;

16. In ruling that plaintiff is not entitled to a patent on his said application containing claims 9 and 10;

17. In dismissing the bill of complaint;

18. In not ruling that claims 9 and 10 of plaintiff's
12 said application define patentable invention over the
prior art, as illustrated in the three patents to Marcy,
Taft and Peterson;

19. In not ruling that plaintiff is entitled to a patent on his said application containing said claims 9 and 10;

20. In not granting the prayers of the bill of complaint.

21. In failing to rule that appellant's invention, as defined by his claims 9 and 10, was not an obvious thing in view of the prompt and sustained demand for warp beams embodying the same from the date of their first appearance on the market.

22. In ruling that appellant's invention, as defined by his claims 9 and 10, is not patentable notwithstanding that appellant was the first to provide the textile industry with a warp beam suitable for use with yarns of all weights and types irrespective of weather conditions.

By his Attorney

GEO. K. WOODWORTH

District Court of the United States for the District of Columbia

Wednesday, June 9, 1937

The Court resumes its sessions pursuant to adjournments, the Justices sitting in Equity, presiding.

* * * * * *

Come now the parties hereto by their respective attorneys of record, and thereupon, the plaintiff by his attorneys presents to the Court his Statement of Evidence taken at the trial of this cause, and prays that the same be signed and made of record, nunc pro tunc, which is hereby accordingly done.

DANIEL W. O'DONOGHUE,
Justice.

---

13 *Designation for Transcript of Record*

Filed June 9- 1937

* * * * * *

Now comes Ray Udell Thornton, the appellant in the above-entitled cause, and designates the parts of the Record which he desires to have included in the Transcript, said parts being considered sufficient for the determination of the questions raised on appeal, namely:

1. Bill of Complaint.
2. Answer.
3. Statement of Evidence.
4. Agreement as to Statement of Evidence.
5. Plaintiff's Exhibits Nos. 1, 4-10,—inclusive, and 12-17, inclusive, (5, 8, 10, 13, 14, 15, physical).
6. Defendant's Exhibit 1, (Item B thereof being Plaintiff's Exh. 9 and Items D, E and F, being included in Plaintiff's Exh. 1).
7. Findings of Fact and Conclusions of Law by Mr. Justice O'Donoghue.
8. The decree and notation of appeal in open court and fixing of bond.
9. Assignment of Errors.

10. Memorandum showing deposit of fifty dollars ($50) for costs on June 9, 1937.

11. Copy of this designation.

By his Attorney

GEO. K. WOODWORTH.

I approve the foregoing Designation for Transcript of Record, and accept service and acknowledge receipt of copy thereof, this 5th day of June, 1937.

R. F. WHITEHEAD
Attorney for Defendant-Appellee

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14 District Court of the United States for the District of Columbia

UNITED STATES OF AMERICA,
District of Columbia, ss:

I, Charles E. Stewart, Clerk of the District Court of the the United States for the District of Columbia, hereby certify the foregoing pages numbered from 1 to 13, both inclusive, to be a true and correct transcript of the record, according to directions of counsel herein filed, copy of which is made part of this transcript, in cause No. 58120 in Equity, wherein Ray U. Thornton is Plaintiff and Conway P. Coe, Commissioner of Patents, is Defendant, as the same remains upon the files and of record in said Court.

In Testimony Whereof, I hereunto subscribe my name and affix the seal of said Court, at the City of Washington, in said District, this 15th day of July, 1937.

CHARLES E STEWART,
Clerk.

By CHAS B COFLIN,
Assistant Clerk.

(Seal)

15 United States Court of Appeals for the District of Columbia Filed Jul 17 1937 Moncure Burke, Clerk.

In the District Court of the United States
for the District of Columbia

In Equity No. 58,120

RAY U. THORNTON, *Plaintiff-Appellant*

v.

CONWAY P. COE, Commissioner of Patents,
Defendant-Appellee

Statement of Evidence

At the hearing of the above-entitled cause on Tuesday, May 4, 1937 before Mr. Justice O'Donoghue, the following proceedings were had and evidence offered and admitted.

No objections were made by either party to any of the testimony or exhibits in the case, nor any exceptions taken by either party with regard to any ruling on said testimony and exhibits.

There appeared, on behalf of the plaintiff,—George K. Woodworth of Boston, Massachusetts, and William L. Edmonston of Washington, D. C. and on behalf of the defendant,—Robert F. Whitehead of Washington, D. C.

Exhibits

Plaintiff offered the following exhibits duly received in evidence:

Plaintiff's Exh. No. 1

Complete certified copy of the file-wrapper and contents in the matter of the pending application of Ray Udell Thornton, Ser. No. 622,059, filed July 12, 1932 for improvement in warper or section beams.

Plaintiff's Exh. No. 2

Enlarged copy of sheet 1 of the drawings included in plaintiff's Exh. 1. (At the suggestion of the Court.)

16 *Plaintiff's Exh. No. 3*

Enlarged copy of sheet 2 of the drawings included in plaintiff's Exh. 1. (At the suggestion of the Court.)

Plaintiff's Exh. No. 4

Copy of patent No. 1,239,744 issued to Ray Thornton, September 11, 1917.

Plaintiff's Exh. No. 5

Bobbin of fine yarn.

Plaintiff's Exh. No. 6

A blueprint of a diagram (marked "Diagram 1") of a warper beam, the heads of which are secured to the barrel by nuts threaded to the shaft and illustrating the spreading of the heads.

Plaintiff's Exh. No. 7

A blueprint of a diagram (marked "Diagram 1a") of a warper beam, the heads of which are secured to the barrel by rods running the entire length of the barrel and illustrating the spreading of the heads.

Plaintiff's Exh. No. 8

A life-size model of the end portion of the warper beam illustrated in Fig. 3 of the application in controversy.

Plaintiff's Exh. No. 9

Copy of patent No. 1,484,154 issued to Burt A. Peterson, February 19, 1924.

Plaintiff's Exh. No. 10

A bobbin of 5-ply No. 23 tire yarn three-plied.

Plaintiff's Exh. No. 11

A blueprint of a diagram (marked "Diagram 2") showing the sales of plaintiff's warper beam during the years 1931 to 1936, both inclusive.

17 *Plaintiff's Exh. No. 12*

A photostat enlargement of the central portion of the beam head shown in Fig. 2 of Peterson patent No. 1,484,154.

Plaintiff's Exh. No. 13

A life-size model of the end portion of the jack spool shown in the Taft patent No. 1,490,864.

Plaintiff's Exh. No. 14

A life-size model of the end portion of the jack spool shown in the Marcy patent No. 455,224.

Plaintiff's Exh. No. 15

A beam head constructed in accordance with the Peterson patent No. 1,484,154.

Plaintiff's Exh. No. 16

Affidavit of Burt A. Peterson, verified June 5, 1936, and stipulation concerning the same.

Plaintiff's Exh. No. 17

Affidavit of John O. Corn, verified June 25, 1936, and two stipulations concerning the same.

Defendant offered the following exhibit, duly received, in evidence:

Defendant's Exh. No. 1

A folder including portions of the proceedings in the Patent Office and copies of the patents cited in the answer, to wit:

Marcy, No. 455,224,
Peterson, No. 1,484,154,
Taft, No. 1,490,864.

18

Testimony

Mr. Woodworth offered plaintiff's Exhs. Nos. 1, 2 and 3, and the same were marked and received in evidence.

Ray Udell Thornton was thereupon sworn, and testified on his own behalf under direct examination by Mr. Woodworth (there being no cross examination) as follows, to wit:

My name is Ray Udell Thornton. I reside in New Bedford, Massachusetts. I am the treasurer and general manager of Allen Company, which specializes in the manufacture of warper beams (sometimes called section beams), and I have been associated with the manufacture of textile devices for about 23 years. My father, Ray Thornton, who preceded me as treasurer and general manager of Allen Company started that company in the manufacture of warper beams of the type shown in his patent No. 1,239,744, Sept. 11, 1917, which is referred to in my application Ser. No. 622,059, filed July 12, 1932 here in controversy. The device shown in said patent is a large spool upon which is wound the warp threads used in the process of weaving and is called a warper beam because it is run on a warper machine where a number of threads are run simultaneously on it. The heads of the spool are made of laminated wood, which was a radical departure from the prior art and revolutionized it to the extent that metal heads were practically supplanted.

(Plaintiff's Exh. No. 4 offered and received in evidence.)

In the spinning mill the fibre in its raw state is put into a carding machine to remove dirt and lay the fibres which are then twisted and stretched until they are formed into a very loosely twisted yarn similar to cotton batting in its consistency and called "roving". The loosely twisted roving is then wound on to a jack spool and the latter is placed in a spinning frame. The roving is then drawn off the jack spool and spun into yarn. The process of spinning consists in transforming the loosely twisted roving into tightly twisted yarn. The yarn is then wound tightly on a bobbin, such as plaintiff's Exh. 5, and fine yarn of this nature is used in the manufacture of sheetings and the like.

19 After the yarn has been spun and wound on bobbins, the latter are placed on a frame and the yarn is wound on to spools or cones (called "packages" or "cheeses") and the latter are then placed in a creel and the yarn wound from them on to a warper beam, from 500 to 800 threads being wound simultaneously on such beam.

The rotational speed of the warper beam during the filling of the same with yarn from the "packages" or "cheeses" is from 1,000 to 1,200 revolutions per minute, which corresponds to a peripheral speed of the beams of about 100 miles per hour. It is quite essential that the warper beam be filled from the "packages" or "cheeses" at this terrific speed in order to eliminate the stretching of the yarn and thereby eliminate the breaking of the yarn in the weaving loom.

A warper beam weighs about 175 lbs. and carries from 500 lbs. to 700 lbs. of yarn. After the warper beam has been filled, it is placed in a machine known as the "slasher" in the weaving mill, the yarn is drawn from the warper beam through a sizing box and is then wound on loom beams which are much smaller than the warper beam and carry a much smaller quantity of yarn. The loom beams are then placed in the loom and the yarn unwound from them during the weaving process. Frequently the weaving mills are distantly located from the spinning mills, and in such cases the filled warper beam must be shipped to the weaving mill by freight or otherwise.

The warper beams as originally made by Allen Company under my father's patent (plaintiff's Exh. 4) were subject to many defects, amongst others, the spreading of the heads, each of which was held against the beam by a nut threaded to the shaft that ran through the entire length of the beam. In order to secure the heads sufficiently firmly to enable the beam to hold the yarn, it was necessary to screw the nuts against the heads very tightly with a long wrench and this caused the heads to "dish", in other words, the outer portions of the heads flared outwardly with the result that when the beams were filled with yarn, the threads near the ends of the beam settled, and such settling of the end threads caused the latter to break when the yarn was drawn from the warper beam and wound on the loom beams.

Spreading is caused also by winding the yarn on the beam with excessive tension, and it may be caused by the pressure exerted against the heads by the yarn when the latter absorbs moisture from an excessively humid atmosphere. Even very fine yarn, such as that on the bobbin marked plaintiff's Exh. 5, will cause spreading if the winding is "dense", i. e., if the yarn is wound on the beam with sufficient tension. If the tension on the yarn is increased, the winding is made denser and a given space filled with yarn wound with a certain tension would weigh more than the same space filled with yarn wound under less tension.

(Plaintiff's Exh. No. 5 offered and received in evidence.)

The heads of the laminated wood warper beam are usually one and one-half inches thick, but nevertheless even fine yarn, such as plaintiff's Exh. 5, will force the heads outwardly if no anti-spreading means is employed.

If yarn is wound on a beam rather lightly and then subjected to a humid atmosphere, such as that experienced in the "dog days" of August, the yarn will absorb sufficient moisture to cause the heads to spread. The heavy yarn used for making the fabric employed in automobile tires is known as "tire yarn", and is styled,—5-ply No. 23 yarn, three-plied.

(Plaintiff's Exh. No. 10 offered and received in evidence.)

Tire yarn will cause much greater spreading of the heads than fine yarn, and it will cause spreading even although the winding is not "dense". When a beam filled with tire yarn is exposed to a humid atmosphere the absorption of moisture is much greater than in the case of fine yarn, such as plaintiff's Exh. 5, and the spreading of the heads is correspondingly greater, being sometimes as large as a little more than one sixteenth of an inch.

(Plaintiff's Exh. No. 8 offered and received in evidence.)

Plaintiff's Exh. No. 8 correctly represents the
21 end portion of the warper beam described in the
application for letters patent now before the Court.

In order to prevent the spreading of the heads I applied a concave steel disc to the outer face of each head.

The Court: "Let me get a little more in detail as to what you mean by spreading."

The Witness: Plaintiff's Exh. 8 shows only the end portion of my warper beam. A complete beam has a head on each end, as shown in my father's patent Exh. 4. "When the yarn is wound on these beams the heads flare or spread outwardly. They are put up perpendicular, and as the yarn goes on, * * * * they have a tendency to spread open; in other words, it is (the) pressure of (the numerous turns of) this yarn piling up on top of one another (that causes the spreading of the heads). They roll a little bit and have a tendency to go down a little and (that causes the heads to) flare".

By the Court:

Q. "And push the heads outwardly?" A. "And push the heads outwardly, yes."

Q. "That is what you call spreading?" A. "That is what we call spreading, yes, sir."

Q. "So when you speak of spreading you mean the head, or the end section, of the beam spreading outwardly from the center of the beam?" A. "Yes."

Q. "And being forced apart by the yarn or thread as it goes around the beam or spool, or what you might otherwise call it?" A. "Yes."

Mr. Whitehead: "It makes it dish-shaped, to be perfectly plain, as a dish."

The Court: "Very well."

(Plaintiff's Exh. No. 6 offered and received in evidence.)

Plaintiff's Exh. No. 6 is a diagram of a warper beam, such as shown in my father's patent (Exh. 4), the heads being held to the barrel by nuts which are threaded
22 to the shaft. This diagram illustrates the effect of
spreading on a somewhat exaggerated scale.

(Plaintiff's Exh. No. 7 offered and received in evidence.)

Plaintiff's Exh. No. 7 is a diagram of a warper beam in which the heads are secured to the beam or barrel by five rods running the entire length of the barrel. This is my invention and is shown in Fig. 1 of the drawings accompanying my patent application involved herein. Three claims have been allowed to this feature. The use of the tie rods for securing the heads to the barrels prevents the spreading of the heads to a small but not appreciable or practicable extent. Plaintiff's Exh. No. 7 correctly illustrates on a somewhat exaggerated scale the effect of the spreading of the heads of warper beams which are secured to the barrel by tie rods.

The spreading of the beam heads results in "selvage breaks". The threads near the ends of the beam are known as salvage threads or edge threads or selvage windings, and in weaving, these threads are at the edge portions of the cloth which are called the selvage. There are two reasons why the spreading of the heads cause the selvage threads to break. When the heads spread the selvage threads settle or pack themselves down and as no mechanical device is used for unwinding them, and they are pulled off the beams by their own tension, the edge threads take the whole pull. The reason they take the whole pull is that the diameter of the yarn mass at the ends where the yarn has settled due to spreading is smaller than the yarn mass at the central portions of the beam. Because the end threads cannot stand the strain to which they are subjected by taking the whole pull, they break. The other reason is illustrated in Exhs. 6 and 7 in each of which a small V-shaped space is represented between the beam and the inner face of each head into which spaces a portion of the yarn at the extreme ends of the beam is caught and held so tightly that it is lost.

One operative ordinarily runs two or three warpers and
if the heads are spread during the winding operation
23 in the warper, the operative must give his time wholly
to the machine in which the beam with spread heads
is being wound. The operative compensates for the spreading by adjusting the "expansion comb", which is a device having a number of thread-guiding fingers which by means of a crank may be brought closer together or farther apart in order to make the warp narrower or wider as the case may be.

I have read the Peterson patent No. 1,484,154, dated February 19, 1924, and agree with the statements contained in the first two paragraphs of p. 1 thereof, immediately following the preamble. I am well acquainted with Mr. Peterson and know that he has been associated with the textile machinery industry for a long time and holds a responsible position in a large company, the Barber-Colman Company, which manufactures warpers and warper beams. No other American company, to my knowledge, except the Barber-Colman Company and Allen Company manufacture warper beams. I have had 23 years experience in this field and I have been consulted by many people, including Peterson, on this subject.

(Plaintiff's Exh. No. 9 offered and received in evidence.)

Plaintiff's counsel then directed the Court's attention to a portion of the Peterson specification with which the witness said he agreed, to wit:

"Moreover, the beam heads have not been sufficiently rigid to prevent spreading and hence it has been necessary for the warper tender to adjust the expansion comb or reed at frequent intervals to compensate for the increasing width between the beam heads."

The concave steel discs used by my to prevent spreading are adjusted either by the manufacturer (Allen Company) or by the spinner at his mill. Sometimes the spinner will ask the manufacturer to make the adjustment and for this purpose informs the manufacturer that the beam is to be used for a certain grade of yarn. Practice has taught the manufacturer how to adjust the steel discs, knowing the type of yarn that is to be wound on the beam.

If the adjustment is made at the spinning mill and
24 the beam is to be used in a moist climate and filled
with very fine sheeting yarn, such as plaintiff's Exh. 5, the adjustment would be such as to "dish" the heads inwardly very slightly, the force exerted by the metal discs dishing the heads inwardly. Then when the beam is filled with yarn after the heads have been dished inwardly for yarn of a certain weight and quality, the pressure exerted by the yarn against the inner faces of the heads straightens the latter back again. The pressure exerted on the inner faces of the heads by very fine yarn, such as plaintiff's Exh. 5, will counteract the force exerted on the outside faces of the head by the concave steel discs screwed up tightly against the heads by a large spanner wrench having a handle four feet long and, in conjunction with the relatively fine-pitch thread whereby said discs are in engagement with the shaft, exerting a tremendous leverage. The force exerted on the inner faces of the heads by not more than 800 lbs. of fine yarn will cause the inwardly dished heads to resume their original position. This is a matter of experience.

When the warper beam is filled with heavy tire yarn, such as plaintiff's Exh. No. 10, the adjustment is heavier than in the case of fine yarn and the heads are dished inwardly to a greater extent. When a warper beam with its heads so adjusted is filled with heavy tire yarn, the force exerted by the yarn mass causes the heads to resume their original position.

When a warper beam is filled with very heavy yarn and is subjected to the moisture contained in a humid atmosphere, the inward dishing of the heads is "a little better than 1/16th of an inch".

My anti-spreading arrangement for warper beams was well received by the industry. No other manufacturer of warper beams makes a beam provided with anything that will prevent spreading. (I have already testified that to the
best of my knowledge, the Barber-Colman Company
25 is the only other manufacturer of warper beams
in the United States.) The users of warper beams

that are not provided with means to prevent the spreading of the heads have had "trouble". We cannot sell all the mills. My company's warper beams cost more than warper beams that are not provided with anti-spreading devices. Under my direction there was produced a graph marked "Diagram 2" to indicate the sales of my warper beams since they were first put on the market in 1931.

(Plaintiff's Exh. No. 11 offered and received in evidence.)

The yearly sales are as follows:

1931	250
1932	300
1933	1400
1934	950
1935	2800
1936	4850
	10,550.

The steel discs shown in plaintiff's Exh. 8 and identified on the patent drawing by the reference number 27, are sometimes returned to our factory to be redished because the pressure exerted on them by the heads is sometimes so great that the discs lose their convexity and become flat.

It would not be possible to make the heads thick enough to withstand the heaviest pressure that could be exerted on their inner faces and still have the device "commercial", because heads so designed would run into such extreme thickness that there would not be room enough in the machine for the warper beam, and also each head would run up into much more weight than a metal head. Furthermore, the element of momentum must be considered, because the centrifugal expansion caused by the speed alone would spread the heads to some extent. I agree with Mr. Peterson's statement in this matter, as I have already testified.

Plaintiff's counsel then read to the Court the statement indicated by the witness, found in the first paragraph of the
Peterson patent No. 1,484,154 (plaintiff's Exh. 9), to
26 wit:

"The warp beams in common use are provided with cast iron heads. Inasmuch as these heads sometimes contain casting defects and also are apt to become cracked by reason of rough handling, they cannot be safely rotated at high speed.''

Before the advent of my invention my company received complaints against our warper beams and after we began manufacturing the beams described in my patent application with steel anti-spreading discs, we have had no complaints. We are still selling such warper beams at a rate somewhat higher than last year.

I have read and understand the patent to Taft No. 1,490,864, dated April 15, 1924 and under my direction a correct model of the jack spool shown in the Taft patent was made.

(Plaintiff's Exh. No. 13 offered and received in evidence.)

The Taft jack spool is provided with two gudgeons (marked 15 in the patent drawings) instead of a shaft going all the way through the spool.

A jack spool weighs from six to seven pounds and is from thirty-two to thirty-six inches long with heads from eight inches to twelve inches in diameter. The discs numbered 5 in the Taft drawings are used as bearing plates to prevent the spindle or gudgeon 15 from working loose. To the inner face of the bearing plate 2, webs 6 and 7 are riveted, and these webs fit into slots in the end of the barrel 1 or cylindrical body of the spool and the head 2 and thus prevent the bearing plate from turning when the gudgeon is being tightened up into the barrel to hold the whole assembly together.

By turning the gudgeon 15 so that the right-hand threaded end 17 thereof is in threaded engagement with the nut 18, the pressure of the disc 5 on the head cannot be varied. The gudgeon tends to go forward (to the right) and pull the nut 18 into the wood; the shoulder 16 on the gudgeon bears against the plate 2 but would not tend to force the plate to the right because the webs 6 and 7 on the sleeve 12 bottom in the grooves or ''nostrils'' in which they are inserted. The fact that the webs 6 and 7
27 engage the bottoms of the grooves or nostrils in
which they are received, would prevent any variation of the pressure exerted by the discs 5 against the heads 2.

It is not essential for Taft's purpose that the discs 5 should be of greater diameter than the beam or barrel 1. My company has manufactured jack spools.

Looking at the Taft structure, and especially Fig. 2 of his patent drawings, the object of the various elements therein shown, the gudgeon 15, the plate 5, the nut 18, and the lock spring 20 that fits over the flattened end 19 of the gudgeon, is to hold all the parts together and to prevent the gudgeon from loosening thereafter.

The Taft patent, in line 15, p. 1 of the specification, states in so many words that the "object of the invention is to provide a fastener for the gudgeon". I do not know of any other object, result, or effect, that could be obtained from what is shown or described in the drawings and patent.

I have read and understand the patent to Marcy, No. 455,224, dated June 30, 1891 and under my direction a correct model of the jack spool shown in the Marcy patent was made.

(Plaintiff's Exh. No. 14 offered and received in evidence.)

Marcy's object does not differ from Taft's and is simply to provide a means for holding the three elements, the gudgeon, the head, and the beam, all tightly together.

The reason Marcy did not use a single shaft passing entirely through the spool with its ends projecting beyond the heads, is partly to reduce the cost of manufacture and partly to reduce the weight of the device. It is cheaper to use gudgeons and the arrangements shown for holding the parts of the spool together, than to use a shaft passing through the spool, but the chief reason for using the gudgeon and its associated parts, instead of a single shaft, is to save weight.

It is necessary to have jack spools as light as possi-
28 ble because after the roving has been wound on the
spools and the latter placed in the spinning frame, the
roving is pulled off by its own tension. There is no mechanical unwinding device and if the spools were heavy, the roving would break, necessitating the stopping of the machines and the piecing up of the ends. For this reason extreme lightness is required of jack spools.

My company used to make a pine-wood jack spool weighing from five to six pounds and we tried to improve it by using hardwood heads which increased the weight of every spool about one pound. The trade rejected these spools because of the increase in weight and our improvement was a flat failure.

If the gudgeon N of the Marcy jack spool were screwed into the washer L (the pin O being removed, of course) sufficiently to hold the assembly together and then turned further in the same direction, the nut J and plug C would be pulled from the chamber B until the left-hand end of the plug came up against the washer or bearing plate L; and any further turning would simply strip the threads. For this reason it would not be possible to increase the pressure of the washer L against the head G by turning the gudgeon.

It is not essential to Marcy's object and the result effected by his structure to have the washer of greater diameter than the beam.

In the jack spools manufactured by my company we employed an outboard bearing device or washer, such as those shown in the Marcy and Taft patents, and the diameter thereof was the same as the diameter of the barrel or beam.

If the disc 5 of the Taft patent were made larger in diameter than the barrel, there would be no change in result and if it were made smaller in diameter, there would be no such change.

In my application, I specify that the disc 27 is to be from 30% to 50% greater in diameter than the barrel, but if the
diameter of the disc 5 of the Taft patent were 50%
29 greater in diameter than the barrel, the spreading
of the heads would not be prevented because such
disc is not heavy enough for this purpose,—in fact, the specification, in line 66 of p. 1, refers to said disc as "a very thin disc". The jack spools made by my company and by other manufacturers employed very thin discs. This is customary.

A jack spool carries about 150 pounds of roving and this roving does not tend to force the heads outwardly. There is no tendency for the heads to spread. The speed of rotation of jack spools in the machine in which they are filled is from 80 to 100 revolutions per minute. The question of momentum and centrifugal force play no part whatever in the design of jack spools and therefore if the rovings did spread the heads, it would be possible to make the heads thick enough and heavy enough to prevent such effect, provided the weight was kept down, because, as I have already testified, the jack spool during the unwinding operation is rotated solely by the tension of the roving. There is no spreading of the heads of jack spools because the load of roving carried thereby is too light.

I have read and understand the patent to Peterson No. 1,484,154, plaintiff's Exh. No. 9.

(Plaintiff's Exh. No. 12 offered and received in evidence.)

I produce a beam head constructed in accordance with the Peterson patent.

(Plaintiff's Exh. No. 15 offered and received in evidence.)

The weight of this head is about sixty pounds. The Peterson patent does not show a head having a stiffening disc, such as the disc marked 27 in the drawings accompanying my application. The Peterson head consists of a truss formed of three members, viz., the discs 1 and 3 and the spacing sleeve 8, and an inside truss consisting of the central portion of the disc 1, the smaller disc 5 and said spacing sleeve. As in any other truss, all the members are rigidly interconnected. The disc 3 is spot welded at its periphery to the disc 1, as indicated at 4. The periphery of the disc 5 is spot welded to the disc 1, as indicated at 6. The spacing sleeve 8 surrounds the internal sleeve or hub 7. The ends of the hub are spun over to secure the parts of the head rigidly together.

In the truss consisting of the central portion of the disc 1, the disc 5 and the spacing sleeve 8, the compression member is the disc 5, the chord or tension member is the central portion of the disc 1, which lies within the circle defined by the barrel, and the strut is the sleeve 8. The construction of the truss-like head is quite similar to that of a railroad bridge in which a number of pieces secured together are employed in place of one very large piece.

Peterson, therefore, does not show a head and an adjustable disc that can be forced up against it, but an arrangement of discs that are welded together to form a structure which has the stiffness and strength of one solid piece. If Peterson warper beam is wound with yarn so heavy that the heads are spread, the operative cannot cause the heads to resume their normal position or bend them inwardly by turning the nut 18 against the outer disc 3 because such turning of said nut would simply push (the central portion of) the head into the middle of the barrel and cause (the outer portions of) the head to spread further outwardly.

Relative movement between the discs 3 and 1 is prevented by the welding of the two together at the periphery of disc 3 and by the spacer sheet 8 which is interposed between the central portions of the discs.

If a beam involving the construction of the Peterson patent were designed for fine yarn, such as plaintiff's Exh. 5, and this beam were wound with heavy yarn, such as plaintiff's Exh. 10, it would not be possible for the operative to tighten the nuts 18 and dish the heads inwardly preparatory to filling the beam with such heavy yarn, because the spacing sleeve 8 would, as I have already said, prevent
31 the disc 3 from moving inwardly toward the disc 1.

(Plaintiff's Exh. No. 16 offered and received in evidence.)

(Plaintiff's Exh. No. 17 offered and received in evidence.)

Defendant's counsel waived cross examination.

(Defendant's Exh. No. 1 offered and received in evidence.)

In response to questions by the Court, the witness testified in substance, as follows:

The warper beams and dished plates (27) are being made and used at the present time. Up to the last part of last year we had made about 10,500 and just before I left home for Washington, I received an order for 320. My company still makes beam heads of laminated wood and applies thereto the metallic dished plates or discs. Three claims have been allowed for the construction shown in Fig. 1 of my application drawings. No claims were allowed to the construction shown in Fig. 3 of said drawings. The claims in controversy are directed to said figure, viz., claims 9 and 10, set forth in Exh. A annexed to the bill of complaint.

The exhibits enumerated in this Statement of Evidence are hereby made a part of said Statement of Evidence to be attached hereto and transmitted to the Court of Appeals with the Transcript of Record on Appeal.

Be it remembered, that the foregoing testimony and exhibits contain the substance of all of the evidence given on the hearing of this cause, and that no exceptions thereto were taken by either party's attorney; and in order that each and every portion thereof may be preserved and made of record, this Statement of Evidence is duly stated, approved, and signed, and ordered to be made of record in the above-entitled cause, this 9th day of June, 1937.

By the Court.

DANIEL W. O'DONOGHUE
Justice

32 We hereby agree that the foregoing Statement of Evidence and Exhibits therein listed and referred to are correct and that the same may be approved by the Court.

WILLIAM L. EDMONSTON
Attorney for Plaintiff-Appellant

R. F. WHITEHEAD
Attorney for Defendant-Appellee

33 Service of the foregoing Statement of Evidence and receipt of copy thereof acknowledged this 4th day of June, 1937.

R F WHITEHEAD
Attorney for Defendant-Appellee

34 Department of Commerce

United States Patent Office

To all persons to whom these presents shall come, Greeting:

This is to Certify that the annexed is a true copy from the records of this office of the File Wrapper, Contents and Drawings, in the matter of the

Pending Application of

Ray Udell Thornton,

Filed July 12, 1932, Serial Number 622,059,

for

Improvement in Section or Warper Beams.

58,120 EQ. U.S.D.C., D of C. Thornton v. Coe. Plaintiff's Exh. 1

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twenty-sixth day of August, in the

~~242~~
~~129~~

NUMBER (Series of 1925)

622059

DIV. 61

PAT 1932

Please return to
J. R. Sildren.
3733.

(EX'R'S BOOK) [illegible]
211

Name RAY UDELL THORNTON

of NEW BEDFORD

State of MASSACHUSETTS

Invention

SECTION OR WARPER BEAMS

Division of App., No. ......, filed ......, 19

ORIGINAL		RENEWED
APPLICATION FILED COMPLETE	JULY 12, 1932	
PARTS OF APPLICATION FILED: Petition, Specification, Oath, First Fee $25, 2 sheets Drawings,	JULY 12, 1932	
Prints July 16/32		

Examined and passed for Issue ......, 193

...... *Exr. Div.* ......

Notice of Allowance ......, 193
By Commissioner.

Final Fee ......, 193

Reexam'd and passed for Issue ......, 193

...... *Exr. Div.* ......

Notice of Allowance ......, 193
By Commissioner.

Final Fee ......, 193

Attorney GEORGE K. WOODWORTH 60 CONGRESS ST BOSTON MASS.

Associate Attorney ......

No. of Claims Allowed ...... *Print Claims* ...... *in O. G. Class* ......

Title as Allowed ......

11—6806

[redacted] [redacted]

MAIL DIVISION
JUL 32
PATENT OFFICE

IN THE UNITED STATES PATENT OFFICE

AFFIDAVIT OF RAY UDELL THORNTON

U.S. PATENT OFFICE
JUL 19 1932
DIVISION 61

State of Massachusetts)
: ss.
County of Bristol)

Ray Udell Thornton having been duly sworn deposes and says that his Christian name is Ray and that Ray is not a contraction or diminutive of any other name.

Ray Udell Thornton

Subscribed and sworn to before me this 30th day of June, 1932.

Charles P. Sawyer
NOTARY PUBLIC

JUL-12-32-542391-A-CHK - 25.00

MAIL DIVISION
JUL 12 32

APPLICATION FOR LETTERS PATENT.

622059

PETITION.

TO THE COMMISSIONER OF PATENTS:

YOUR PETITIONER, Ray Udell Thornton

citizen of the United States and resident of New Bedford in the County of Bristol and State of Massachusetts, and whose Post-Office address is 136 River Road, New Bedford, Massachusetts,

prays that Letters Patent may be granted to him

for the Improvement in SECTION OR WARPER BEAMS

set forth in the annexed specification; and he hereby appoints GEORGE K. WOODWORTH, Registration No. 7243, of 60 Congress Street, Boston, Mass., his attorney with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Ray Udell Thornton

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN that I, Ray Udell Thornton

citizen of the United States, and resident of New Bedford in the County of Bristol and State of Massachusetts have invented a new and useful Improvement in SECTION OR WARPER BEAMS

of which the following is a specification:

622059

The present invention which relates to section or warper beams is an improvement on Letters Patent Nos. 1,239,744, September 11, 1917, and 1,470,946, October 16, 1923 to Ray Thornton.

Heretofore it has been customary to secure the heads of such beams to the barrel portion thereof by means of nuts threaded to the shaft and taking against the heads; but experience has shown that such nuts are frequently loosened especially when there is a sudden stoppage or change in the speed of the beam, the heads of which rotate at high peripheral speed, such speed sometimes exceeding one hundred miles an hour. By means of the present invention I am enabled to eliminate the use of the nuts aforesaid by securing the heads directly to the barrel, the barrel directly to discs mounted on the shaft and said discs to said shaft by means of flanged collars or the like.

It has been found in practice that the heads, unless made excessively thick sometimes spread when the beam is filled with yarn. By the present invention I eliminate this defect by providing stiffeners which may take the form of convex discs preferably of resilient material, each disc having threaded engagement with the shaft and each being disposed with the outer periphery of its concave face in engagement with the outer face of one of the heads so that by screwing the disc along the shaft the stiffeners will be forced against their respective heads and thereby prevent the longitudinal distance between the outer periphery of said heads becoming greater than the length of the barrel when yarn is wound on the beam. It is essential for this purpose that the diameter of each stiffener be substantially greater than that of the barrel. C

Preferably the means for securing the heads to the staves which make up the barrel consist of longitudinal rods passing through said staves and heads together with nuts which give the same the necessary tension. I have found it desirable to place said rods in grooves which preferably are cut in one of the side faces of several of the staves and the latter may be connected together by tongue-and-groove construction.

An illustrative embodiment of my invention is shown in the accompanying drawings in which -

Figure 1 is a fragmentary longitudinal section of a beam embodying my invention;

Fig. 2 is a transverse section taken on the line 2-2 of Fig. 1;

Fig. 3 is a fragmentary longitudinal section showing a modification.

In the particular drawings selected for more fully disclosing the principle of my invention, said drawings to be considered merely as illustrative and not as restrictive, 10 is a shaft on which are mounted several discs or pairs of discs 11, said discs preferably being of wood as shown. Usually three discs or pairs of discs are employed, one at or near the center of the barrel and the other two near the ends thereof. By means of wood screws 12 said discs are secured to the flanged collar 13 and the latter is rigidly connected to the shaft in any suitable manner as, for example, by set screws of which one is shown at 14. The barrel staves 15 are secured to the discs by means of screws 16 or in any other suitable manner which will provide a rigid construction. If screws are employed, each is preferably inserted through a counterbore which is then closed by a wooden plug 17, thus preserving the smooth surface of the barrel. Rods 18 pass through longitudinally-extending grooves in some or all of the staves and also through the heads 19, said rods being held from endwise movement and being properly tensioned by the nuts 20 threaded to the ends of said rods and taking against the washers 21 disposed in recesses cut in the outer face of the head.

Preferably the heads are of unitary or one-piece construction comprising three layers of wood secured together in the manner set forth in said Letters Patent 1,239,744, although it will be understood that the present invention is applicable to heads of any other construction.

Mounted on the shaft and extending through each head is a flanged sleeve or hub 22 to which, by means of machine screws 23, or other suitable means, the heads are rigidly secured. By interposing the hubs between the shaft and heads,

a much larger bearing surface for the heads is obtained than if the latter were mounted directly on the shaft. This is advantageous in that it prevents enlargement or distortion of the central hole in the head which sometimes results when a heavy loaded beam which is mounted directly on the shaft comes forcibly in contact with a solid surface, as when such beam is dropped on a cement floor. The hub 22 serves also to maintain the concentricity of the barrel and the heads and is instrumental in transferring the weight of the yarn wound on the barrel to the center of the heads and thence to the floor or other support on which the beam is placed, thereby relieving strain on the shaft.

As indicated in Fig. 2 each stave has a longitudinally-extending groove 24 milled in one of its side faces for receiving a rod and the other side face thereof is provided with a groove 25 for receiving the tongue 26 formed on the face of the next adjacent stave. ~~As indicated in~~ See Fig. 2 which shows ten staves although the number is not material, the grooves of every other stave is provided with a rod 18, although it will be understood of course that my invention is not limited to this relation between the number of rods and staves. a

By means of the construction shown in Fig. 1 it is possible to dispense with the nuts heretofore employed for holding the heads against the barrel without any risk of relative movement between the heads and the barrel due to sudden changes in the speed of the revolving beam.

Referring to Fig. 3 the flanged sleeve or hub 22' does not pass through the head but is cut off flush with the outer face thereof and the ends of the shaft are threaded to receive the stiffeners 27 shown in the present instance as concave discs, preferably of resilient material, for example, hot rolled steel. Each disc is arranged with its convex surface outward with respect to the adjacent head and is slightly larger in diameter than the barrel. For example, if the barrel is 10" in diameter, the stiffener discs may be from 13" to 15" in diameter. By means of a spanner wrench taking into the holes 28, each disc may be turned up against the head with the necessary force to prevent the spreading of the outer peripheral portions of the latter and is held in adjusted position by the lock-nuts 29, said nuts 29 also serving as spacers when the the beam is put on its own trunnions.

Having thus described illustrative embodiments of my invention without however limiting the same thereto, what I claim and desire to secure by Letters Patent is:

1. A section beam comprising a shaft, discs 11 mounted on said shaft, staves spaced around said discs and forming a barrel, each of said staves being provided with a longitudinally-extending groove 24, a pair of heads mounted on said shaft, a plurality of rods 18 each disposed in one of said grooves and passing through said heads, and means 20 co-operating with said rods for drawing said heads against the ends of said barrel.

Genus 1+3.

5/18/34

2. A section beam comprising a shaft, discs mounted on said shaft, staves spaced around said discs and forming a barrel, each of said staves (having) a longitudinally-extending groove (in one of its side faces), a pair of heads mounted on said shaft, a plurality of rods each disposed in one of said grooves and passing through said heads and means 20 co-operating with said rods for drawing said heads against the ends of said barrel.

gen

5/18/34 +1,2

Genus Spec 7,1,2

3. A section beam comprising a shaft, discs mounted on said shaft, staves spaced around said discs and forming a barrel,/ one of the side faces of each of said staves being provided with a longitudinally-extending rod-receiving groove and a longitudinally-extending tongue 26,/and the other side face of each of said staves having a longitudinally-extending tongue-receiving groove 25, a pair of heads mounted on said shaft, a plurality of rods each disposed in one of said rod-receiving grooves and passing through said heads, and means 20 co-operating with said rods for drawing said heads against the end of said barrel.

[illegible]

~~4. A section beam comprising a shaft, discs 11 mounted on said shaft, staves spaced around said discs and forming a barrel, a pair of heads mounted on said shaft, flanged sleeves 22 mounted on said shaft and extending through said heads, respectively, means 23 securing the flanges of said sleeves to said heads respectively, flanged collars 13 mounted on said shaft, means 12 securing said collars to said discs, respectively, means 14 securing said collars to said shaft, and means securing said ~~shafts~~ staves to said discs.~~

X3

a

5. A section beam comprising a shaft, a barrel ~~and a pair~~ of heads mounted

a each engaging the outer face of said heads and being

on said shaft, a pair of discs ~~in~~ threaded engagement with said shaft, each

a Page 3 adjacent thereto

said disc being convex outwardly with respect ~~to the adjacent~~ head and each 29

being larger in diameter than said barrel, and means for locking each said

a disc

~~plate~~ against axial movement with respect to said shaft.

6. A section beam comprising a shaft, a barrel and a pair of heads mounted

Fig. 3 a5 on said shaft, a pair of discs of resilient material) in threaded engagement with said shaft, each said disc being convex outwardly with respect to the adjacent head and each being larger in diameter than said barrel, and means for locking each said disk ~~plate~~ against axial movement with respect to said shaft.

7. A section beam comprising a shaft, flanged hubs 22 mounted on said shaft,

Gen heads 14 mounted on said flanged hubs respectively, means securing said heads

N4 [illegible] to the flanged portions of their ~~respective~~ hubs, a barrel, ~~and~~ means 12 securing said heads to said barrel, discs mounted on and secured

a to said shaft, and means 16 securing said barrel to said discs.

Add 131

Add 10'

IN TESTIMONY WHEREOF, I have hereunto subscribed my name this 30th day of June 1932.

Ray Udell Thornton

OATH.

State of Massachusetts } ss.
County of Bristol }

Ray Udell Thornton

the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States and resident of New Bedford, in the County of Bristol and State of Massashusetts; that he verily believes himself to be the original, first and sole inventor of the Improvement in

SECTION OR WARPER BEAMS described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States,

Ray Udell Thornton

Subscribed and sworn to before me this 30th day of June 1932.

Charles P. Sawyer
Notary Public

622059 7

~~242~~

622059 B

Fig.1.

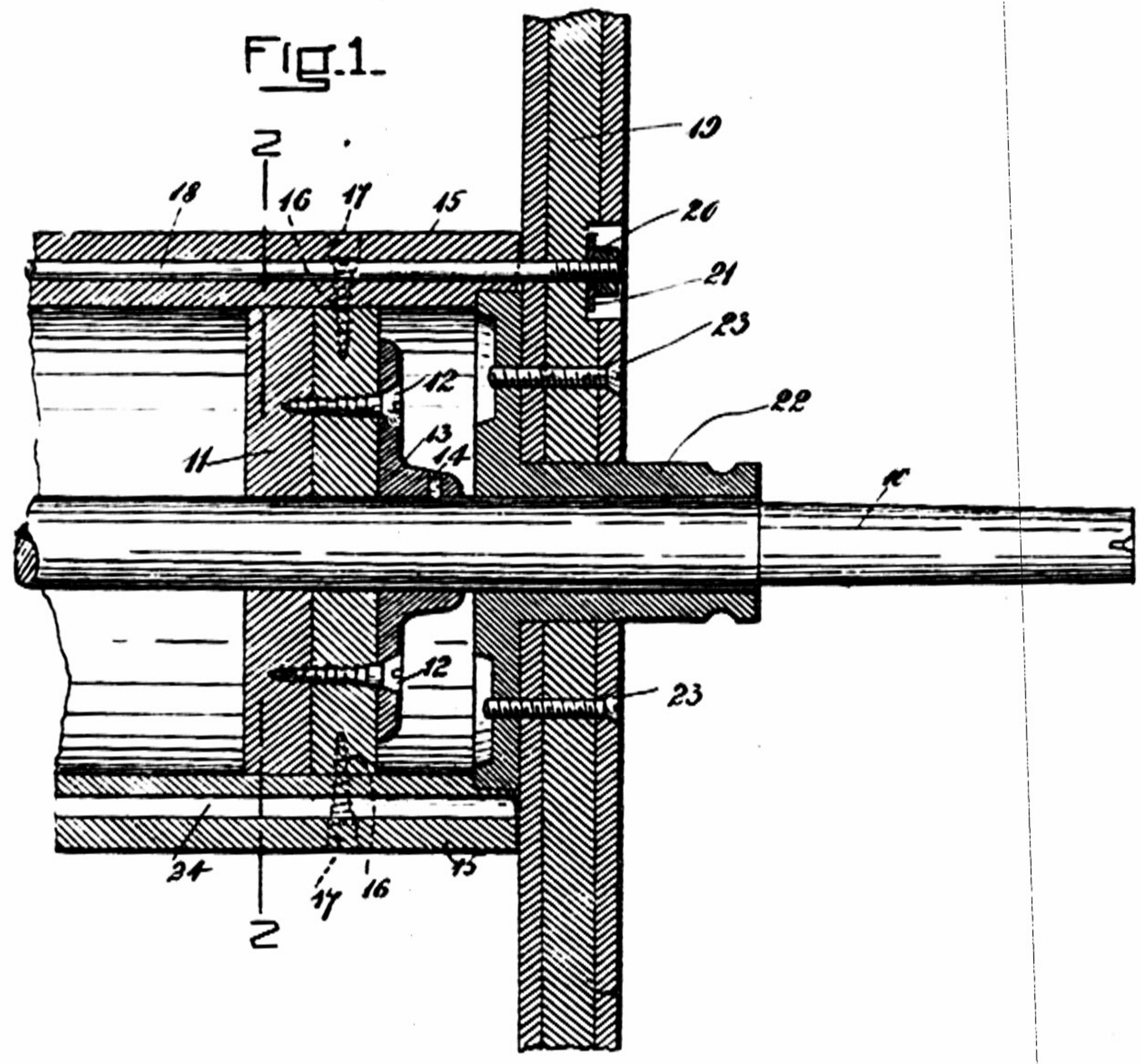
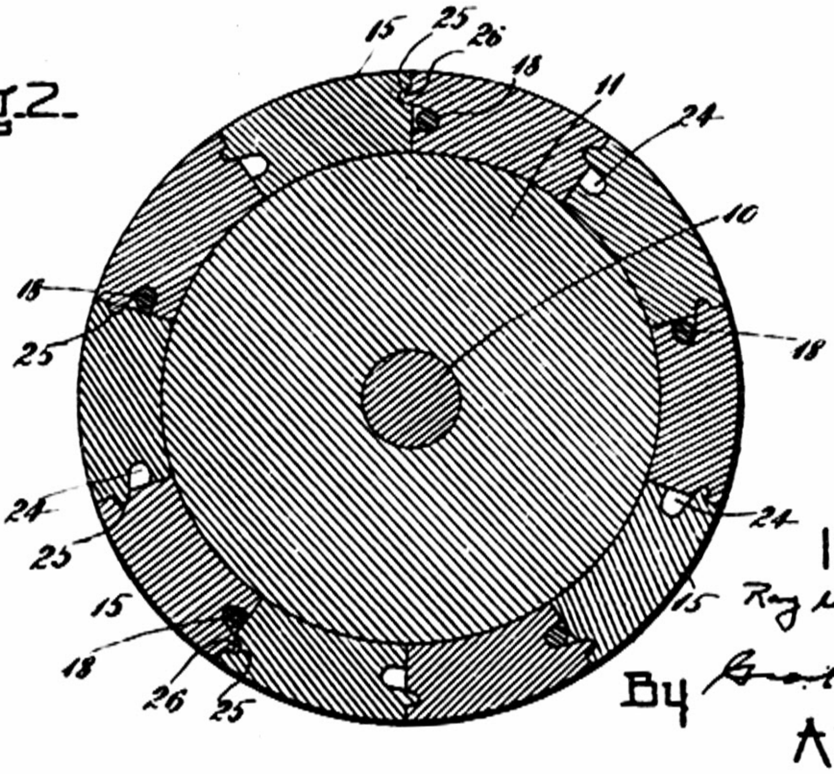


Fig.2.

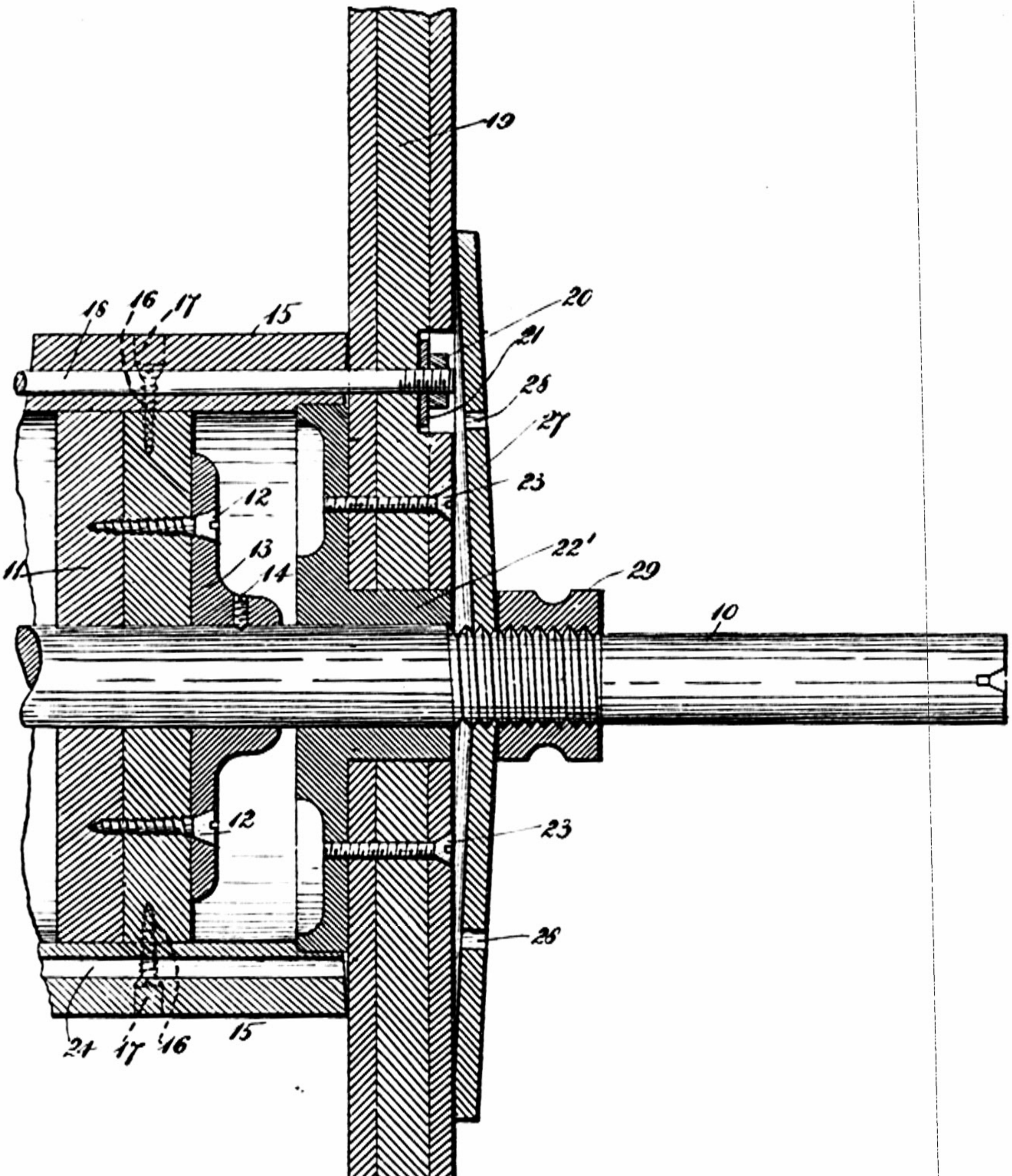


INVENTOR:
Ray Mitchell Thornton

By Geo. K. Woodworth.
ATTORNEY:

Serial No 622059

Fig. 3.



INVENTOR=

Ray Udall Thornton

By Geo. K. Woodworth

ATTORNEY=

year of our Lord one thousand nine hundred and thirty-six and of the Independence of the United States of America the one hundred and sixty-first.

(Seal)

Attest:
D E WILSON
Chief of Division.

CONWAY P. COE,
Commissioner of Patents.

Plf Exh 1

(Here follows photostats marked pages 35 to 45)

46 Div. 61 Room 6724 Mi-as Paper No. 2.

Address only

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name

All communications respecting this application should give the serial number, date of filing, and name of the applicant.

Department of Commerce

United States Patent Office

Washington

Dec. 12, 1932.

Please find below a communication from the Examiner in charge of this application.

THOMAS E. ROBERTSON
Commissioner of Patents

Applicant: R. U. Thornton

Ser. No. 622,059 Filed July 12, 1932 For Section of Warper Beams.

George K. Woodworth 60 Congress Street Boston Mass.

Endorsed: Mailed Dec. 12 1932

This application has been examined.

References:

Tuttle	1,307,526	June 24, 1919	242-123	p59
Packard	810,506	Jan. 23, 1906	242-124x	p60
Thornton	1,470,946	Oct. 16, 1923	242-124	”
Washburn	1,741,800	Dec. 31, 1929	”	”
Beecher	1,007,417	Oct. 31, 1911	242-117	

Claims 5 and 6 are objectionable as no antecedent is provided for "plate" in the last line.

Claims 1, 2 and 3 are rejected on Washburn in combination with Beecher. Washburn shows a plurality of staves 13,23 having a tongue and groove connection (see Fig. 4). It is not considered to require invention to use through bolts such as disclosed by Beecher and which may pass through the members 17 (see page 1, line 79) in the Washburn device, the claims then being met.

Claims 4 and 7 are rejected on Thornton in view of Tuttle. The latter patent shows flanged sleeves 4 which can be adapted in the Thornton beam for member 24 without invention.

Claim 4 is also rejected as being inaccurate. The "*shafts*" are not secured to the disks 11 as stated in the last line. Presumably "shafts" should be *staves*.

Claims 5 and 6 are rejected on Packard. The threaded engagement of the disk is not deemed a patentable difference.

Claims 5 and 6 are also rejected as being aggregative. The relation between the disks and the remainder of the elements has not been properly brought out.

47 Claim 6 does not appear to differentiate patentably from claim 5. The material of which an element is made does not provide a patentable limitation as a general rule.

It is noted that claims 5 and 6 are specific to Fig. 3.

G. E. PARKS
Examiner.

48 Endorsed: U. S. Patent Office Jan 21 1933 Division 61

Endorsed: Mail Division Jan 20 33 U. S. Patent Office

In the United States Patent Office

Room 6724: Div. 61
R. U. Thornton
Ser. No. 622,059
Filed July 12, 1932
Section or Warper Beams
In response to Office letter of Dec. 12, 1932.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

Page 3, line 13, cancel "As indicated in" and substitute —(In)—.

Claim 4, last line, cancel "shafts" and substitute —(staves)—.

Claim 5, line 2, after "discs" insert—(each engaging the outer face of said heads and being)—.

Line 3, cancel "adjacent". Same line after "head" insert—(adjacent thereto)—.

Line 5, cancel "plate" and substitute—(disc)—.

Cancel claim 6.

Claim 7, line 3, cancel "and", line 4; change the period (.) to (a comma) (,) and add:

(—discs mounted on and secured to said shaft, and means securing said barrel to said discs—.)

Remarks

The citations have been carefully considered and at best the rejection would seem to be one in terms and not in substance because the structures to which the claims are directed accomplish new and useful results not attainable by the structures of the citations.

Except in the case of claims 5 and 6, the Examiner has held that the construction of a given patent could be modified in accordance with the structure of another patent and that as modified the claims would be met. The Courts re-

peatedly have held that this is not the way to de-
49 termine the question of invention. For example, the Court of Appeals of the Second Circuit in two decisions published in the Gazettes of December 13, 1932 and December 20, 1932 have stated the law as applied for many years by the Courts. In

Peters Co, Inc. v. MacDonald, 425 O. G. 214, C. C. A. 2, the Court held

"It is not sufficient to constitute an anticipation to say that by modification the function of the patent in suit might be accomplished".

In

Anderson and Writer Corp. v. Hanky Beret, Inc, 425 O. G. 429, C. C. A. 2 the Court held that to modify a prior patent so as to do the work of the patent in suit would so change its purpose and design that it cannot be an anticipation of the latter.

There is nothing new in these two rulings because the Courts invariably have held that a new combination of old elements producing a new and useful result or an old result in an improved manner is patentable.

The rule followed by the Patent Office generally is that references cannot be combined unless one shows the main organization and another an equivalent of some element in the first, the substitution of which for such element would be obvious.

It is believed the claims all define patentable subject matter and distinguish from the citations not only in terms but also in substance.

The specification sets forth three new and useful results, viz,

1. The elimination of the nuts threaded to the shaft to secure the heads to the barrels. Such elimination of said nuts and the use of means securing the heads directly to the barrel, the barrel directly to the discs mounted on the shaft and the discs directly to the shaft eliminates the danger of overrunning due to sudden stoppage of the beam or change in its rate of rotation.

2. The use of stiffening discs to prevent the spreading of the heads when the beam is loaded.

3. The use of the flanged hub which being interposed between the shaft and heads affect the several useful

50 results specified in the first nine lines of page 3.

Claims 1, 2 and 3 are directed specifically to a construction found convenient and desirable for effecting the first new result aforesaid.

Claims 4 and 7 are directed more broadly to constructions for accomplishing said result, but as the arrangements defined by claims 1, 2 and 3 have been found extremely efficient in practice, this construction has been claimed specifically.

The Washburn and Beecher patents, cited against said claims, and the reasons why they were so cited have been carefully considered.

Beecher relates to a foreign art. The differences in the structures of a windlass for raising and lowering heavy articles and a beam used in the textile industry are so marked that nothing in the former art would be of any assistance in the latter. The Examiner refers to page 1, line 79 of Beecher and says that the bolts 19 may pass through the *members* 17, but a careful reading of the specification will show that the element numbered 17 is a filling between the shaft and the casing or barrel 16, such filling being "wood, tar, cement or sand". Obviously the only function of the bolts or rods 19 is to clamp the flange 18 at the left end of the shaft to the wheel 14 at the right end. The casing or barrel 16 is mounted on the hubs of the wheel and the flange 18 and clamped between these members by the rods 19. The sole function of the rods is to clamp the wheel and flange against the drum casing. There would be no point, in this connection, in securing the filling material to either the wheel or flange. Even if there were, the rods would not accomplish this purpose.

In applicant's construction, however, the rods 18 which pass through the barrel staves not only clamp the two heads against the barrel, but hold each individual stave against the heads so that there cannot be the slightest tendency for relative movement between the heavy loaded barrel and the heads due to sudden stoppage of the beam or a change in the speed thereof.

Oil-well windlasses not being subject to the defect which this invention was designed in part to remedy, it would seem clear that Beecher did not have in mind the problem confronting applicant.

The Examiner however, says, that if Beecher were taken in connection with Washburn, one would have appli-
51 cant's construction as defined by claims 1, 2 and 3
but the Examiner will not fail to note that Washburn shows the very construction that applicant seeks to eliminate, viz, nuts 31 for clamping the heads to the barrel.

There being no means in Washburn for securing the heads to the barrel, it will not do to say that applicant who has eliminated a prior art defect by attaching the heads to the barrel has not made an invention because the specific means illustrated by him for this purpose, viz, the rods 18, are old for clamping the wheel and the flange of a windlass against the drum casing. *Hobbs* v. *Beach*, 1901, C. D. 311.

If a section beam were constructed in accordance with the Beecher windlass, a change in speed would produce overrunning in spite of the rods 19.

Claims 4 and 7 have been rejected on the patent to Ray Thornton, *father* of the applicant, taken in connection with Tuttle. For many years the late Ray Thornton and his sons have been engaged in the manufacture of textile beams of various kinds and the present invention is considered a great improvement over that of the Thornton patent 1,470,946 in which nuts 24 must be used and rods 17 arranged along the inner surface of the barrel are employed to clamp the heads to the barrel. It will be noted in this connection that the barrel as a whole is clamped to the heads and not each stave thereof, as in the present instance, because the rods do not pass through bores in the stave.

As to claims 4 and 7 the Examiner says that the flanged sleeve 4 of Tuttle could be "adapted in the Thornton beam for the member 24 without invention" but the test of invention is, generally speaking, the accomplishment of a new and useful result.

In the Thornton patent the shaft is detachable, being removed when a loaded beam is shipped and to center said shaft and permit its ready removal a centrally-disposed pipe 13 is employed through which the shaft passes. The shaft is held in position by bushings 23, each provided with a polyangular flange 24 and threaded to the ends of the shaft. These sleeved bushings merely hold the shaft in position and center the same. The heads are not secured to the "polyangular flanges" 24. The heads in the present instance are secured as by the screws 23 to the flanges of the sleeves 22 or 22′.

52 The Examiner will perceive therefore that the nuts 24, that is to say, centering sleeves with polyangular flanges cannot possibly be the equivalent of the flanged hubs or sleeves 22 or 22′ of the present case, because they do not perform the function thereof.

Tuttle, however, shows a flanged support 4 secured by rivets 6 to the barrel and secured also by the bolts 17 to the head. We thus find an element which acts as a connector for the barrel and the head. Clearly, this element is not the equivalent of the nuts 24 of the Thornton patent and could not be substituted therefor.

Even if the structure of the Thornton patent were modified so as to accommodate the support 4 with its sleeve 12, and the nuts 24 eliminated, claims 4 and 7 would not read on Thornton so modified. It might be remarked, incidentally, that the Thornton structure modified in the manner suggested by the Examiner would require a substantial reorganization of the former and would not be an improvement over Thornton but, on the contrary, a decided step backward.

Claim 6 has been cancelled because applicant agrees with the Examiner that it is not patentably different from claim 5, a difference not material (in the present instance, at least) not constituting a patentable difference. Claim 6 therefore has been cancelled.

Claim 5 which is directed to the same subject matter as claim 6 and is broader than the latter has been amended to remove the objection that it is aggragative.

Claim 5 clearly is patentable over Packard because first, as a matter of terms the discs (27) are specified as being larger in diameter than the barrel and second, as a matter of substance the washers c of Packard are merely means interposed between the shoulder on the stud d and the heads to transmit the inward movement of said studs to the heads and thereby fasten the heads to the barrel. In the present instance the heads are fastened to the barrel by the rods

18 and the discs 27 are stiffeners to prevent the spreading of the heads when the barrel is loaded.

Reconsideration and allowance are requsted.

Respectfully,

GEO. K WOODWORTH,

Jan 19 1933 *Attorney for Applicant*

53 Endorsed: Mail Division Jan 24 33 U. S. Patent Office

Endorsed: U. S. Patent Office Jan 25 1933 Division 61

In the United States Patent Office

Room 6724: Div. 61
R. U. Thornton
Ser. No. 622,059
Filed July 12, 1932
Section or Warper Beams

In further response
to Office letter of
December 12, 1932.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

With reference to claims 1, 2 and 3 including as elements a plurality of rods disposed in grooves in the staves, in addition to the advantages pointed out in applicant's communication forwarded January 19, page 3, next to last paragraph, and page 4, paragraph 3, applicant desires to say that when the rods are placed below the staves as in his father's patent No. 1,470,946, experience has shown that there is a tendency to dish the beam-heads, i.e., to pull them into concave shape, whereas in applicant's own construction these rods running through the barrel staves eliminate this objection as they pull the heads firmly against the edges of the staves. In addition, being securly anchored in said grooves, they are more effective in preventing any relative movement between the heads and the barrel due to sudden stoppage.

Respectfully,

GEO. K. WOODEWORTH,
attorney for applicant.

Jan 23 1933

54 Endorsed: Mailed Apr 24 1933

Div. 61 Room 6724 Mi-as Paper No. 5

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name

All communications respecting this application should give the serial number, date of filing, and name of the applicant

Department of Commerce
United States Patent Office
Washington

Please find below a communication from the Examiner in charge of this application.

THOMAS E. ROBERTSON
Commissioner of Patents.

April 24, 1933.

Applicant: Ray Udell Thornton
Ser. No. 622,059
Filed July 12, 1932
For Section or Warper Beams

George K. Woodworth
60 Congress Street
Boston Massachusetts

Responsive to amendment of Jan. 20, 1933:

Additional reference:

Besse	1,265,292	May 7, 1918	242-124

Claims 4 and 7 are again rejected on Thornton in view of Tuttle. The former patent clearly shows all the elements claimed with the exception of the flanged sleeves. It is maintained that sleeves 4 of Tuttle are the full equivalent of those shown by applicant, and can be used in the Thornton device without inventive skill to replace the nuts 24. To meet the terms of the claim, member 13 of Thornton is considered the shaft.

Claims 4 and 7 are also rejected on Besse, supra, in view of Thornton, of record. Besse shows flanged sleeves 10 upon which the head is mounted. In the Thornton reference there are flanged collars 19 secured to the disks 12; similar means can be employed in the Besse beam without invention, the claims then being met.

Claims 1, 2, 3, and 5 are at present considered allowable. Applicant is advised to prepare for final action.

H. M. ARMSTRONG
Act. Examiner.

(Here follows photostat marked page 55.)

56 Endorsed: Mailed June 2 1933 Div. 61 Room 6724
Mi-as Paper N. 7.

Department of Commerce
United States Patent Office
Washington

Address only "The Commissioner of Patents, Washington, D. C., and not any official by name.

All communications respecting this application should give the serial number, date of filing, and name of the applicant.

June 2, 1933,

Please find below a communication from the Examiner in charge of this application.

THOMAS E. ROBERTSON
Commissioner of Patents.

Applicant: R. U. Thornton

Ser. No. 622,059 Filed July 12, 1932 For Section or Warper Beams.

George K. Woodworth
60 Congress St.
Boston Massachusetts

Responsive to proposed amendment of May 31, 1933:

The last amendment of May 31, 1933 is held not to be a complete response to the rejection of April 24, 1933. In accordance with Rule 68 "applicant must clearly point out all the patentable novelty which he thinks the case presents". If there is a difference over claim 5, this difference should

MAIL DIVISION
MAY 31 33
U.S. PATENT OFFICE

#6/13
a.s.

IN THE UNITED STATES PATENT OFFICE

U.S. PATENT OFFICE
JUN 1 1933
DIVISION 61

Room 6724: Div. 61

Ray Udall Thornton

Serial No. 622,059

Filed July 12, 1932

Section or Warper
Beams

In response to Office
letter of Apr. 24,1933

Hon. Commissioner of Patents,
Washington, D.C.

Sir:

Cancel claims 4 and 7. Add the following claim:

c

passing through the same

8. A section beam comprising a shaft, a barrel and a pair of heads moun-
the ends of said shaft extending beyond said heads,
ted on said shaft, a pair of discs each engaging the outer face of said heads,
each said disc being convex outwardly with respect to the head adjacent thereto
substantially
and each being larger in diameter than said barrel, and means for locking each
whereby said heads are prevented from spreading when the beam is filled with yarn
said disc against axial movement with respect to said shaft.

c
bound threaded
c B fr5
engagement by felt

add 10 7

REMARKS

Claim 8 which is drawn along the lines of claim 5 clearly is allowable.

Applicant has constructed beams in accordance with Fig. 3 of the drawings in which the discs 27 were not threaded to the shaft and were larger in diameter than the barrel and has gotten good results with this construction.

This case is believed to be in condition for allowance.

Respectfully,

MAY 29 1933

ATTORNEY FOR APPLICANT

be pointed out and also how the claim avoids the art of record.

The date of abandonment runs for six months from the previous office rejection of April 24, 1933.

Time Limit: October 24, 1933.

G. E. PARKS
Examiner

HFM

57 Mail Division Jun-5 33 U. S. Patent Office U. S. Patent Office, Jun 6 1933 Division 61 Paper #8

Letter

In the United States Patent Office

Div. 61: Room 6724
R. U. Thornton
Ser. No. 622,059
Filed July 12, 1932
Section or Warper Beams

In response to Office letter of June 2, 1933

Hon. Commissioner of Patents,
Washington, D. C.

Remarks

Sir:

Claim 8 which is drawn along the lines of claim 5 and omits the limitation of the threaded engagement of the discs 27 to the shaft is believed to be patentable over Packard of record for the reasons set forth in applicant's amendment of Jan. 20, 1933, page 5, viz, (1) as a matter of terms, claim 8 does not read on Packard because it calls for discs (27) of larger diameter than the barrel, and (2) the washers c of Packard which are not larger in diameter than the barrel *a* are not the equivalents of applicant's washer 27 and are intended to perform an entirely different function, said washers *c* being merely interposed between the shoulder on the stud *d* and the heads to transmit the inward movement of the studs to the head and thereby fastern the heads on the barrel, whereas the heads of applicant's beam are fastened to the barrel by the rods 18, the said discs 27 being stiffeners to prevent the spreading of the heads when the barrel is loaded.

Claim 8 is believed to be patentably different from claim 5 which is limited to the threaded engagement of the discs

27 to the shaft. Admittedly, the optimum result is obtained by threading the discs to the shaft so that when the nut 29 is tightened the discs will retain their convex shape and the outer peripheries thereof will exert greater pressure on the heads than if the central hole through the discs were smooth and the tighening of the nut flattened the discs up against their respective heads.

Obviously any form of abutment other than that afforded by the threaded engagement of the discs to the shaft would suffice to prevent the flattening of the discs. Even if no such abutment were employed and the force exerted on the discs by the nut should serve to flatten or to render
58 the angle between the juxtaposed faces of a head and
its co-operating disc larger or more nearly a right angle than that shown in Fig. 3, the advantage of the present construction would be retained in part.

If the discs are larger in diameter than the barrel one of the three new results specified on page 2 of the amendment of Jan. 20, 1932 is obtained, viz, the preventing of the spreading of the heads when the beam is loaded.

Claim 8 is broader than claim 5 and states a construction whereby the result aforesaid (specified paragraph 3, page 1, present specification) is obtained.

Claim 5 may therefore be considered as subsidiary to claim 8 in that it specifies a particular construction whereby said result is accomplished, namely, a head in which the discs are in threaded engagement with the shaft. The limitation that carries each of said claims over the Packard patent is "that each disc is larger in diameter than the barrel".

This case is believed to be in condition for allowance.

Respectfully

GEO. K. WOODWORTH
Attorney for Applicant.

Jun 3-1933

59 Endorsed: Mailed Aug 21 1933 Div. 61 Room 6724
Mi-as Paper No. 9

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, and name of the applicant.

Department of Commerce
United States Patent Office
Washington

August 21, 1933.

Please find below a communication from the Examiner in charge of this application.

CONWAY P. COE
Commissioner of Patents.

Applicant: R. U. Thornton
Ser. No. 622,059
Filed July 12, 1932
For Section or Warper Beams

George K. Woodworth
60 Congress Street
Boston Massachusetts

Responsive to letter of June 5, 1933:

Additional reference:

Taft 1,490,864 April 15, 1924 242-124 P60

Claim 8 is rejected as being met by Taft who shows disks 5 to engage the outer faces of the heads.

Claims 1, 2, 3 and 5 stand allowed.

H. M. ARMSTRONG
Acting Examiner.

HFM

60 Mail Division Sep-1 33 U. S. Patent Office U. S. Patent Office Sep 2 1933 Division 61 Paper #10/c A.S.

In the United States Patent Office.

Div. 61
Room 6742
R. U. Thornton
Ser. No. 622,059
Filed July 12, 1932
Section or Warper Beams.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

In reply to office action of August 21, 1933: Page 1, line 16 after "disc" insert—preferably. Page 1, line 23 after "be" insert—*substantially.*—

Claim 8, line 1 after "shaft" insert—*passing through the same.*— Line 2, after "shaft" insert—(the ends of said shaft extending beyond said heads,)—. Line 4, after "being" insert—*substantially.*— Line 5, after "shaft" insert—(whereby said heads are prevented from spreading when the beam is filled with yarn)—. Remarks: As will be noted by paragraph 2, page 1 of the specification the convex discs are stiffeners and perform the function set forth in the above amendment in the form of a "whereby clause." In the Taft patent the discs do not and cannot perform the function of stiffeners and do nothing more than assist in locking the heads in place (page 1, line 64). It is however a fact that each convex disc is shown as slightly larger in diameter than the barrel. This of course, is a mere vagary of the draftsman because it is obvious that each disc might as well be slightly smaller in diameter than the barrel as slightly larger so far as the accomplishment of its intended purpose is concerned. Applicant, however, cannot repatent the Taft structure by attributing to it a function not described in said patent. It is clear, however, that the function of applicant's convex discs could not be effected
61 by the discs of the reference. Claim 8 accordingly
has been amended more clearly to define the invention by specifying that each disc is *substantially* larger in diameter than the barrel. This is not a mere matter of de-

gree however because, by making the discs larger in diameter than the barrel, a new function is performed.

Furthermore in the reference gudgeons are employed in place of shafts and the chief function of the discs 5 is to afford a bearing plate for the gudgeons (in fact they are described as "bearing plates") and to assist in locking the gudgeons in place.

Claim 8 accordingly has been amended to include a shaft which passes through the beam with its ends extending beyond the heads thereby taking the case away from the class of devices shown in the reference.

As a new and useful result is affected by the combination set forth in claim 8, there is no reason why applicant should be limited to his preferred construction in which the discs are threaded to the shaft as defined by allowed claim 5. As stated in his communication of May 31, 1933 applicant has secured good results when the bores of the discs were not threaded. It is of course possible and in fact probable that a court would hold that a smooth bore disc in sliding engagement with the shaft was a mere colorable evasion of claim 5; but in the event of litigation much time and trouble would be saved if suit could be brought on claim 8 rather than claim 5.

Claim 8 as amended differentiates both in terms and substance from the Taft patent and accordingly its allowance is requested.

GEO. K. WOODWORTH
Attorney for Applicant.

Aug 31 1933

62 Mailed Dec 6-1933 Div. 61 Room 6724 Mi-as
Paper No. 11

Address only "The Commissioner of Patents, Washington
D. C., and not any official by name

All communications respecting this application should give the serial number, date of filing, and name of the applicant

Department of Commerce
United States Patent Office
Washington

December 6, 1933.

Please find below a communication from the Examiner in charge of this application.

CONWAY P. COE
Commissioner of Patents.

Applicant: R. U. THORNTON
Ser. No. 622,059 Filed July 12, 1932
For Section or Warper Beams

George K. Woodworth
60 Congress Street
Boston Massachusetts

Responsive to amendment of Sept. 1, 1933:

Additional references:

Marcy	455,224	June 30, 1891	242-123	P59
Peterson	1,484,154	Feb. 19, 1924	" -124	"

Allowance is withdrawn from claim 5 in view of the above cited patents. The delay in citation thereof is regretted by the examiner.

Claim 5 is now rejected on Peterson in view of Marcy. In the Peterson reference there is shown a concave disk 3 which is of larger diameter than the barrel and is held against axial movement by means 18, 19. In the Marcy patent is shown the expedient of threading the discs, which expedient it is believed can be adopted in Peterson without invention. The claim is then considered met.

Claim 5 is also rejected on Marcy in view of Peterson. The discs L of Marcy are larger in diameter than the barrel. To adopt a shaft as C of Peterson instead of gudgeons is deemed devoid of invention, in which case the claim is met.

Claim 8 is again rejected on Taft, of record, and also on

Marcy, *supra,* both in view of Peterson, *supra.* Taft and Marcy each show discs with larger diameters than the barrel. The disclosure in the references is considered sufficient to clearly meet this feature. Although the contrary is contended to be true by applicant, the size of the discs is considered at best a question of degree; should it be desired to strengthen the outer portions of the flanges of the spool, it would be obvious that the discs should be made
63 larger to obtain this function. As indicated in the rejection of claim 5, to substitute a shaft such as that of Peterson for gudgeons is not believed to require invention.

Claim 8 is further rejected as fully met by Peterson (disc 3).

Claims 1, 2 and 3 are still deemed to be allowable.

G. E. PARKS
Examiner.

HFM

64 U. S. Patent Office Jan 12 1934 Division 61

Mail Division U. S. Patent Office Jan 11 34

In the United States Patent Office

Room 6724: Div. 61
R. U. THORNTON
Serial No. 622,059
Filed July 12, 1932
Section or Warper Beams
In response to Office letter of Dec. 6, 1933

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

Cancel claims 5 and 8. Add the following claims:

9. A section beam comprising a shaft, a barrel and a pair of heads mounted on said shaft, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter and in threaded engagment with said shaft, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel and means for locking each said disc against axial movement

with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.

10. A section beam comprising a barrel, a shaft passing through the same, and a pair of heads mounted on said shaft, the ends of said shaft extending beyond said heads, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel and means for locking each said disc against axial movement with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.

65 *Remarks*

In the last Office action claims 5 and 8 were incorrectly referred to as 12 and 13.

Claims 9 and 10 substituted for claims 5 and 8, respectively, are identical with the claims before the Examiner on the date of his action of Dec. 6, 1933 with the exception that the "whereby" clause which ended claim 8 has been incorporated in claim 9 and in both claims the discs are characterized as "independent of and separable from" the heads.

Marcey adds nothing to the record, the construction shown therein being substantially identical with or at least equivalent to that described in the Taft patent.

In neither patent is there any disclosure of the desirability of stiffening the heads for the purpose of preventing the spreading thereof when loaded with yarn, nor are any stiffeners shown.

Applicant is familiar with the practical forms of spools of the Taft and Marcey type, in fact, he has long manufactured and sold substantially the same kind of spools.

It is the custom of the trade to make the discs such as 5 of Taft and L of Marcey substantially the same in diameter as the beam. At least two companies beside applicant's Company has long made spools of this general type,—the Vermont Spool and Bobbin Company of Burlington, Vermont, possibly the assignee of the patentee Taft, and U. S. Bobbin & Shuttle Company of Providence. The only use of the discs in spools of this type is to center the gudgeons. If these bearing plates or discs (Taft page 1, line 65) were not employed, the gudgeons would be apt to wobble and enlarge the center aperture of the beam or, in the case of Marcey, the wood plugs C in which they rest.

The mere fact that each disc is very slightly larger in diameter than the beam is of no significance whatever. While it is recognized that patent drawings need not be made to scale, it cannot be assumed in the absence of descriptive matter that these discs are sufficiently greater in diameter than the beams to enable them to perform the same function as applicant's discs which are substantially larger in diameter than the barrel.

66 Before the Examiner had read this case, did he consider the Taft and Marcey discs to be stiffeners?

In the absence of a specific statement that said discs perform the function of stiffeners, the Examiner is not justified in attributing such function to them. Nor is the size of the disc merely a matter of degree. The fact that by making the discs substantially larger in diameter than the beam applicant accomplishes a new result and one that could not be effected by Marcey and Taft, clearly shows the difference to be one of kind and not of degree.

Claim 8 read on Peterson and claim 5, disregarding the limitation of the disc being threaded to the shaft, also was met in terms by this reference. There is, however, a clear and patentable distinction between the structures defined by claims 9 and 10 and that disclosed by the Peterson patent.

By making the discs independent of and separable from the heads a new and valuable result is accomplished and that is that the degree of tension can be varied.

In beams intended for tire fabric such as three strands of five-ply No. 23 yarn twisted together, the tension to which the discs are subjected by the threaded engagement thereof with the shaft, or by the nut 27 when the central bore of the discs is not threaded, is so great that the outer radial portion of each head from the outer surface of the barrel to the periphery of the head is forced inwardly so that such outer radial portions of the heads at the respective ends of a beam are inclined toward each other.

In beams for yarn of other types such as used in sheeting mills the tension on the discs is not greater enough to force the outer radial portions of the heads out of the plane of the end of the barrel.

Sometimes, in extreme cases where a much denser winding of yarn even of the more usual types is desired, the tension is made great enough to bend the outer radial portions of the heads inwardly.

At times during periods of high humidity the yarn will absorb moisture and expand to such a degree as to spread the heads. The mill operatives thereupon increase the tension on the discs to restore the heads to their original form and position.

Applicant's customers have frequently returned beams
for adjustment and additional dishing of the discs. For example, when the excessive pressure required by un-
67 usual circumstances has flattened the discs somewhat,
so as to reduce their effectiveness, either the beam in its entirety or the discs are returned to applicant's factory and the discs restored to their original shape or else given a larger amount of dishing than they originally possessed in order to render them effective for use under conditions and for purposes not contemplated when the beams were ordered.

The foregoing facts will be verified by affidavit if desired.

In the Peterson patent it is of course impossible to alter the tension on the discs 3 because the central portions of said discs and the "bracing discs" 5 are secured at their central portions by the sleeve 7 and the ends of said sleeve are spun over to secure the parts of the head rigidly together, the "parts of the head" being the discs 1, 3 and 5. The bracing disc 3 is fixedly secured to the main disc 1 by spot welding (Peterson page 1, lines 80-107).

The sleeves 7 and 8 would prevent any relative movement by the nuts 18 of the central portions of the discs 3 and 5, with respect to the disc 1, and as the discs 3 and 5 are spot-welded to the disc 1 at the points 4 and 6, there could be no increased tension on the discs 3 and 6 even if the sleeves 7 and 8 were not used.

Claims 9 and 10 cannot be read in terms on Peterson and as each defines a structure whereby a new and useful result not possible in Peterson is effected, these claims clearly are patentable.

Respectfully,
GEO. K. WOODWORTH,
Attorney for Applicant.

Jan 10 1934

68 Endorsed: Mailed Apr 17 1934 Div. 61 Room 6724
Mi-as Paper No. 13

Address only
"The Commissioner of Patents,
Washington, D. C."
and not any official by name

All communications respecting this application should give the serial number, date of filing, and name of the applicant

Department of Commerce
United States Patent Office
Washington

April 17, 1934.

Please find below a communication from the Examiner in charge of this application.

CONWAY P. COE
Commissioner of Patents.

Applicant: Ray Udell Thornton
Ser. No. 622,059
Filed July 12, 1932
For Section or Warper Beams

George K. Woodworth
60 Congress Street
Boston Massachusetts

Responsive to amendment of Jan. 11, 1934:

The Office action of Dec. 6, 1933 was in error in the numbers by which the claims were referred to. Throughout said action, claim 12 should read *claim 5* and claim 13 should read *claim 8*.

Claim 9 is rejected on Marcy in view of Peterson. In the Marcy patent the discs are independent of the head. Although the patentee does not say that the discs perform the function of stiffeners, these disks do perform this function. Applicant's argument has been considered, but where a reference clearly shows the structure involved, merely to ascribe some new function is not a patentable difference. The Peterson reference discloses that large plates for stiffening purposes are known in the art, so that this is a further indication that no patentable novelty resides in this construction. Disks of a like size may be adapted in Marcy without exercising invention. Peterson further shows the use of a shaft which may be substituted for the gudgeon of Marcy without invention, as was previously indicated.

Claim 10 is rejected on Marcy or Taft in view of Peterson for reasons indicated in the rejection of claim 9.

Claims 1, 2 and 3 stand allowed as at present advised.

Since the subject matter of new claims 9 and 10 is similar to that of claims 5 and 8 (incorrectly called 12 and 13) considered in the previous office action, this rejection is made final.

G. E. PARKS
BSM *Examiner.*

69 Mail Division U. S. Patent Office Apr 27 34

In the United States Patent Office

Room 6724: Div. 61
Ray Udell Thornton
Serial No. 622,059
Filed July 12, 1932
Section or Warper Beams.

Hon. Commissioner of Patents,
Washington, D. C.
Sir:

I hereby appeal to the Board of Appeals from the decision of the Primary Examiner in the above-entitled application, claims 9 and 10 of which were finally rejected Apr. 17, 1934.

Assignments of error:

1. The Examiner erred in finally rejecting said claims on the references and for the reasons of record.
2. The Examiner erred in matters of law.
3. The Examiner erred in matters of fact.

Respectfully,

RAY UDELL THORNTON
By GEO. K. WOODWORTH,
His Attorney

April 26, 1934.

Enclosure: Check for $15

Board of Appeals U. S. Patent Office Apr 30 1934

70 Endorsed: Mailed May 11 1934

Paper No. 15
Mi-as

In the United States Patent Office

Before the Board of Appeals on Appeal

In re Application of Ray Udell Thornton
Section or Warper Beams
Serial No. 622,059
Filed July 12, 1932

Examiner's Statement

Applicant appeals from a final rejection of claims 9 and 10 found in Paper No. 12 (claims 1, 2 and 3 having been allowed).

The references relied on are:

Marcy	455,224	June 30, 1891
Peterson	1,484,154	Feb. 19, 1924
Taft	1,490,864	Apr. 15, 1924

In this application is disclosed a warper beam for yarn having a barrel composed of staves 15 interlocked at 25, 26. This feature appears in allowed claims 1, 2 and 3. Heads 19 are held against the barrel by rods 18 and may be stiffened by discs 27 threaded on shaft 10 (see Fig. 3). These discs are convexed outwardly and are "slightly larger in diameter than the barrel" as is stated on page 3 of the specification, line 10 from the bottom. Shaft 10 supports the beam.

The patent to Marcy shows a threaded disc L on a spool which disc is larger in diameter than the barrel A. Spindles N support the spool.

Peterson has discs 3 to brace a warp beam. However, these discs are secured by a sleeve 7 and are consequently not separable as is true in applicant's construction. An axial shaft C extends through the center of the beam.

71 Taft like Marcy discloses a spool with discs 5 larger in diameter than barrel 1. Support for the spool is provided by gudgeons or spindles 15.

Claim 9 was rejected on Marcy in view of Peterson, on the ground that to make the gudgeons N of Marcy a single shaft would not involve invention. It is submitted that it is quite obvious that so far as attaching the heads and stiffening discs of Marcy is concerned it is immaterial whether two gudgeon members as in Marcy or a single shaft as in Peterson are employed. The applicant has contended that although the discs L of Marcy were shown to be larger in diameter than the barrel, neither the function nor desirability of stiffening when loaded with yarn were disclosed by the patentee. However, it is believed that since the discs L of Marcy are clearly shown to be larger than the barrel, they would perform this function. The overlap of L of Marcy beyond the barrel is substantial in the showing and it appears to the examiner that there is no reason whatever for assuming such a showing to be merely accidental. At any rate, Peterson adopted large disc 3 for this very purpose, showing this idea to be old.

The following is a comparison of claim 9 with the references as applied:

Marcy shows a beam comprising a shaft (in view of Peterson), a barrel *A* and a pair of heads *G* mounted on said shaft, a pair of discs *L* each engaging . . . and in threaded engagement with said shaft, each said disc being convex outwardly with respect to the head adjacent thereto and
each being substantially larger in diameter than
72 said barrel (Marcy alone or in view of Peterson)
and means for locking each said disc (end of threaded portion of spindle *N*) against axial movement . . . . when the beam is filled with yarn.

Claim 10 was rejected on Marcy or Taft in view of Peterson for reasons indicated in the rejection of claim 9. Taft was not used in the rejection of the former claim since the discs are said to be threaded in that claim, and Taft provides a disc 5 with a smooth bore. The limitation of "threaded engagement" is omitted in claim 10.

G. E. PARKS
Examiner, Div. 61.

HFM

Copy mailed to:

Mr. George K. Woodworth,
60 Congress Street,
Boston, Massachusetts.

73 Address only The Commissioner of Patents, Washington, D. C. 201-a Appeal No. 11,743 Paper No. 16. Notice of Hearing.

Department of Commerce
United States Patent Office
Washington

May 19, 1934

Sir:

The case of Ray Udell Thornton, Serial No. 622,059, will be heard by the Board of Appeals on the 18th day of July, 1934.

The hearings will commence at 9.30 A. M. and as soon as the argument in one case is concluded the succeeding case will be taken up.

If any party, or his attorney, shall not appear when the case is called, his right to an oral hearing will be regarded as waived.

The time allowed for arguments is as follows:

Ex parte cases, thirty minutes;

Inter partes appeals: Interlocutory and final hearings when no testimony has been taken, thirty minutes each side; final hearing when testimony has been taken, one hour each side.

By special leave, obtained before the argument is commenced, the time may be extended.

The appellant shall have the right to open and conclude in inter partes cases, and in such cases a full and fair opening must be made.

Briefs in inter partes appeals must be filed in accordance with the provisions of Rules 144 and 163.

Respectfully,

CONWAY P. COE
Commissioner of Patents.

To
George K. Woodworth, Esq.,
60 Congress Street,
Boston, Mass.

74 Mail Division U. S. Patent Office. Appeal No. 11,743 Paper No. 17 Board of Appeals, U. S. Patent Office, May 25 1934 Brief

In the United States Patent Office
Before the Board of Appeals on Appeal.

Application of
Ray Udell Thornton
Section or Warper Beams
Serial No. 622,059
Filed July 12, 1932

Brief for Appellant

On page 3, line 10 from the foot of page, the word "slightly" should read—*substantially*—. Motion is hereby made for leave to make the necessary correction.

In the following two lines it will be noted that the diameter of the stiffener disc is from 30% to 50% greater than the diameter of the barrel. Such a difference is more aptly described as *substantial* rather than "slight".

The appealed claims were drafted with the fact in mind that the said discs were very much larger, *i. e.*, "substantially" larger in diameter than the barrel. The fact that the term "slightly" had been used in the specificatioin was overlooked at the time the appealed claims were drafted and at the time claim 8, the prototype of one of the appealed claims was amended, viz, September 1, 1933. Had the terminology employed on p. 3 been noted on Sept. 1, 1933, the tenth line from the foot of that page would have been amended by substituting—substantially—for "slightly" to bring the same into accord with the two following lines.

Whichever way the decision goes, this motion ought to be allowed because the error in terminology is obvious.

* * * * * *

Marcy and *Taft* really have no place in this record 75 and do not constitute substantial grounds even for the limitation of the appealed claims, much less their anticipation because each comes within the perview of a long line of harmonious decisions to the effect that a mere accidental showing is not anticipation. See for example:

Mosler v. Lurie, 209 F. 364 at 366, C. C. A. 2:

"With a deliverance of the Circuit Court of Appeals for the Seventh Circuit (Gray Telephone P. S. Co. v. Baird

Mfg. Co., 174 Fed. 417, 98 C. C. A. 353) we fully concur. It reads as follows,—

'A patent for a mechanical combination is not anticipated by a drawing in a prior patent which incidentally shows a similar arrangement which is not essential to the first invention, and was not designed, adapted, or used to perform the function which it performs in the second invention, and where the first patent contains no suggestion of the way in which the result sought is accomplished by the second inventor' ".

In re Watts, 58 F. (2d) 841, 842, C. C. P. A.

In the latter case the Court after referring to the well-known rule of law that drawings alone may be anticipations, although the description does not ascribe patentee's or applicant's function to an element, goes on to say in effect that there was no disclosure in the patent to justify the inference that the purpose of the prior structures was the same as that of the case at Bar, and therefore the Board of Appeals was reversed. The Court said on p. 843:

"Basing our deductions alone upon the drawings in Frantz, as we must, since the specifications shed no light upon the matter, we do not feel that the *slight* curves of Frantz, can perform the *same* function in *all* respects as the loops of appellant."

76 In *Marcy* the diameter of the "concave washer L" exceeds that of the barrel A by about 13% and in *Taft* the diameter of the "bearing plate 5" exceeds that of the barrel 1 by about 8%.

Applicant realizes of course that patent drawings are not necessarily to scale, or even in proportion; but it is clear that any practical worker in this art desiring to prevent the spreading of the heads would necessarily make the stiffening discs very much larger in diameter than the barrel and not of practically the same diameter, as in the case of Taft and Marcy.

The question of matter of degree is not involved herein, as will be shown hereinafter.

The point made at this time is that the plates 5 and L of Taft and Marcy, respectively, are nothing more than bearing plates to support the gudgeons and secure the heads to the barrels.

Marcy. The object of invention is not stated but the nature of the invention is obvious from the claims.

The gudgeon N is threaded and the washer screwed thereon
"against the plain section of the spindle so that the washer L cannot be loosened by unscrewing it upon the spindle". (P. 1, line 74).

(Incidentally, this is the equivalent in every respect of the Taft structure in which the gudgeon is shouldered against the disc 5 so that when the gudgeon is screwed into the nut 18 the force applied to the washer will be transmitted to the head).

The plug C is driven into the chamber B. The gudgeon is then inserted through the central bore of said plug and the inner end screwed through the stationary nut J,
"bringing the nut J firmly against the inner end of the plug C and drawing the edge of the concave washer firmly upon the head G".

By this means the head G is firmly held on the
77 barrel A and the nut and washer "act as checknuts, one for the other",—page 2, line 3.

Taft. The stated object is "to provide a fastener for the gudgeon of the jack-spool, which may be easily applied and locked in place, the construction being such as to cause the locking means to also lock the head of the spool against removal".

The patentee states:
"In order that the gudgeon may not work loose a bearing plate is provided for supporting the same near the outer end". (P. 1, line 28).

The device is assembled in substantially the same way as Marcy's by inserting the threaded end of the gudgeon into the central aperture of the barrel and screwing it "into the nut 18 until the parts are tight",—p. 1, line 100. The spring lock 20 (Fig. 7) is then inserted through the passageway 21 to serve as a nut-lock.

In neither of these patents is the problem confronting applicant, and partly solved by Peterson, recognized. Any stiffening of the heads by the discs 5 or L which but slightly overlap the barrels would be negligible. The showing is purely accidental and the fact that the diameter of each disc is slightly larger than that of the barrel is a mere vagary of the draftsman.

During the prosecution of the case applicant tendered the following facts with offer to verify the same if required.

"In beams intended for tire fabric such as three strands of five-ply No. 23 yarn twisted together, the tension to which the discs are subjected by the threaded engagement thereof with the shaft, or by the nut 22 when the central bore of the discs is not threaded, is so great that the outer radial portion of each head from the outer surface of the barrel to the periphery of the head is forced inwardly so that
78 such outer radial portions of the heads at the respective ends of a beam are inclined toward each other.

In beams for yarn of other types such as used in sheeting mills the tension on the disc is not great enough to force the outer radial portions of the heads out of the plane of the end of the barrel.

Sometimes, in extreme cases where a much denser winding of yarn even of the more usual types is desired, the tension is made great enough to bend the outer radial portions of the heads inwardly.

At times during periods of high humidity the yarn will absorb moisture and expand to such a degree as to spread the heads. The mill operatives thereupon increase the tension on the discs to restore the heads to their original form and position.

Applicant's customers have frequently returned beams for adjustment and additional dishing of the discs. For example, when the excessive pressure required by unusual circumstances has flattened the discs somewhat so as to reduce their effectiveness, either the beam in its entirety or the discs are returned to applicant's factory and the discs restored to their original shape or else given a larger amount of dishing than they originally possessed in order to render them effective for use under conditions and for purposes not contemplated when the beams were ordered." (Paper No. 12, pp. 3 and 4).

These facts not being denied by the Examiner and no requirement for affidavit showing having been made must be considered as admitted.

79 *Grounds of Rejection*

"Change in Degree". The Examiner's position is set out on page 2 of his Statement as follows:

"The applicant has contended that although the discs L of Marcy were shown to be larger in diameter than the barrel, neither the function nor desirability of stiffening when loaded with yarn were disclosed by the patentee. However, it is believed that since the discs L of Marcy are clearly shown to be larger than the barrel, they would perform this function. The overlap of L of Marcy beyond the barrel is substantial in the showing and it appears to the examiner that there is no reason whatever for assuming such a showing to be merely accidental.''

At one time the Examiner believed that making the discs of Taft and Marcy sufficiently large to serve applicant's purpose was ''at best a question of degree'' (Office letter December 6, 1933).

Claim 5, the prototype of claim 9, was allowed Apr. 24, 1933 and again on Aug. 21, 1933 after the citation of the Taft patent. If the Examiner had believed the case to turn on matter of degree, he would not have allowed this claim.

It was not until the case had had three Office actions that Peterson and Marcy were cited (Office letter Dec. 6, 1933). The rejection was then on ''Peterson in view of Marcy'' and in the alternative on ''Marcy in view of Peterson''.

Altogether, there has been considerable shifting in position by the Examiner.

In the Examiner's statement which presumably represents his latest views, the ground of rejection is Marcy and/or Taft in view of Peterson and the matter-of-degree position has been abandoned.

Lest the Board should consider the claims invalid over Marcy or Taft on the ground that making the discs of those structures large enough to prevent the beamheads from
spreading is a ''mere matter of degree'' applicant
80 directs attention to the following decisions on the sub-
ject of ''change in degree,'' each showing that even a small change in degree producing a difference in kind and effecting a new and useful result is patentable:

Coal Co. v. Sutton, 35 Fed. (2d) 433, C. C. A. 4,

Here the patent in suit was a table for separating particles of different specific gravity, such as ore, coal, etc.

The only substantial difference between the patent in suit and the art resided in the slowing up of the transverse movement of the table ''which could be caused by elevating the end of one of the old separating tables'', but the Court held that "while the slowing up of the transverse movement of the heavier particles on one of the old separating tables *might* have been accomplished by elevating the end of the table, as contended by defendants, *no one thought of doing this* as a means of accelerating the process of separation" (p. 435). The Court then described the advantages obtained by plaintiff's patentee and said "knowledge after the event is always easy; but as said by Mr. Justice McKenna in the Grant Tire Case: 'The law has other tests of the invention than subtle conjectures of what might have been seen and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration' ",—citing

Diamond Rubber Co. v. Cons. Tire Co, 220 U. S. 428, 435, 31 S. Ct. 444, 447, 55 L. Ed. 527;
U. S. Industrial Chemical Co. v. Theroz Co. (C. C. A. 4th) 25 Fed. (2d) 387;
Frick Co. v. Lindsay (C. C. A. 4th) 27 Fed. (2d) 59.

The Court then held that the doctrine of the Eibel case (261 U. S. 45) was controlling. "In that case the invention involved merely the elevation of the breast roll end of the paper-making wire of a Fourdrinier paper-making machine", with the result that a new and useful object was effected.

81 In both of the foregoing cases, the ore separation and the Eibel cases, a very slight change in degree was held to be patentable because it made a difference in kind. The same doctrine that a change in degree is a change in kind when a new and useful result is accomplished has been applied repeatedly by the Board of Appeals,—see

Ex parte Washburn, 15 Patents Quarterly, 124.

A scrubbing cloth *thoroughly* impregnated with soap was held not to anticipate a towel *slightly* impregnated with soap which would clean and dry a wet surface but not form a lather.

Here the extremely small difference in degree produced a difference in kind and the result being new and useful, the primary examiner was reversed.

Ex parte Cofrin, 8 Pat. Q, 273.

The new result effected was to eliminate the deleterious effect of water on the forming sheet of a paper-making machine. The ground of rejection was that applicant's contribution was a mere change in size or degree. Applicant, however, was the first to discover a limitation in the prior art and to devise a remedy therefor. Neither the limitation or difficulty nor the remedy was suggested by the art, over which the claims distinguished by specifying that the tube rolls were "of a diameter *sufficient* to substantially reduce the effect of centrifugal force on the surface of the rolls, whereby to eliminate the deleterious effect of such water on the forming sheet".

It was held error to reject the claim as involving a mere change in degree and the examiner was reversed.

Ex parte Hale, 15 Pat. Q, 123.

Here the Board allowed process claims which distinguished from the art merely in a specification of the temperature at which the material in question was treated.
Prior patents showed that this material had been
82 heated to 300°-305°. The claims were limited to heat-
ing said material to 320°-400°. The new result was a high yield of pure phenol. The prior processes produced low yields of impure phenol. Here again one finds that the difference was not merely one of degree but was one of kind, and as a new result was effected the process was held to be patentable.

Ex Parte Heck, 10 Pat. Q. 155.

In this case the claim was for a screen for talking moving pictures and its novelty resided in a single thickness of fabric provided with perforations *sufficient* in number and size to permit the passage of sound waves while preserving the light-reflecting properties of the surface. The prior art disclosed a screen having large openings for the passage of the sound waves but so large that a rear screen was required.

The appellant accomplished his new and useful result by using a screen that was thinner than those theretofore used and by providing the same with a larger number of perforations than were used in the prior screens and making them much smaller in diameter than those previously used. Appellant's change was not a *mere* difference in degree, but as a new and useful result was effected by such change, the Board held that the change in degree was really a change in kind and that such change in kind removed the case from the settled rule of law that a *mere* change in degree is not patentable.

In the absence of a specific statement that the discs of Marcy and Taft perform the function of applicant's discs in preventing the spreading of the heads when the beam is loaded, there is not the slightest ground for attributing such function to them.

Making the discs from 30% to 50% larger in diameter than the barrel (applicant's specification, p. 3, lines 27, 28) is not a mere change in degree because by making them "substantially larger in diameter than said barrel", as expressed in the appealed claims, applicant accomplishes a result that could not be effected by the references and of
which there is not the slightest hint therein. The dif-
83 ference is clearly one of kind and not of degree.

The discs of the references are used solely as bearings or fasteners for the gudgeons and to lock the heads of the spools against removal, as explicitly stated in Taft and as is obvious from the Marcy specification.

Now that applicant has disclosed a valuable improvement in section or warper beams it is easy enough to say that the Peterson patent would tell anyone skilled in the art that the discs of Marcy and Taft could be made sufficiently large to accomplish applicant's purpose; but in view of the complete lack of disclosure of this purpose in Taft and Marcy, it is manifestly improper to combine the two references for the purpose of making out a rejection, because in such case the rejection consists merely in picking out one element of one patent and another of another patent, a mode of rejection that would prevent the issue of practically every patent ever granted.

It will be noted that in Marcy and Taft the discs constitute the only means for securing the heads to the barrel, while in applicant's case the heads are held in position by the screws 23 and the rods 18 and nuts 20. Thus if the discs 27 were removed the heads would still be secured to the barrel and the beam could still be used effectively for ordinary yarns. (See applicant's Fig. 1).

Marcy and/or Taft in view of Peterson. Being unable to reject the claims for *anticipation* by Marcy and Taft on the ground that the change made by applicant is one in degree only, the Primary Examiner rejects the claims for lack of invention over these patents in view of Peterson, this of course being an entirely different matter from anticipation and raising the ground of sufficiency of invention.

As no Court was ever known to invalidate a claim on a patent for a device that was not invented to accomplish the object of the patent in suit, it is believed the absurdity of using Marcy or Taft as principal references will be manifest to the Board. The question therefore logically stated is whether or not Marcy and Taft would tell the skilled worker that Peterson could be modified to accomplish applicant's result. 84

Peterson is the only reference of record that recognizes the difficulty which applicant's invention is designed to overcome,—see Peterson, p. 1, paragraphs beginning line 19 and line 45.

The present invention therefore may be considered as an improvement on Peterson and to be a step in advance thereof. This step is expressed by the limitation in each of the appealed claims that the discs are "independent of and separable from" the heads.

By making the discs independent of and separable from the heads applicant is enabled to accomplish the new results set forth in his tender of facts on pp. 4 and 5, ante.

In Peterson the stiffening discs 3 are secured fixedly to the heads 1 by a series of spot welds 4 (p. 1, line 83). The hub or sleeve 7 and the spacing sleeve 8 are employed specifically to prevent any relative movement of the central portion of the disc 3 with respect to the head (p. 1, line 95, et seq). In fact, the gist of the Peterson invention is that the head 1, disc 3 and sleeve 8 constitute a truss which effectively resists forces tending to spread the beamheads apart, just as the internal bracing disc 5, spot-welded to the head at 6, the sleeve 8 and the central portion of the disc 1 constitutes a truss of which 5 is the compression member, the central portion of the disc the tension member and the sleeve 8 the strut (p. 2, line 37, et seq).

It would therefore be impossible to vary the force exerted by the discs 3 on the heads to accommodate the beam to

yarns of unusual types (pp. 4 and 5, ante) by tightening the nuts 18. After the nut 18 has been screwed against the central portion of the disc 3 in order firmly to clamp the latter between the nut and sleeve 7, any further turning of the nut would merely serve to compress that portion of the disc against which said nut works. It would not cause such central portion to move inwardly toward the head. It would not therefore cause the peripheral portion of the disc to exert pressure inwardly on the periphery of the head.
85 The discs would prevent the spreading of the heads if the yarn was not too heavy but they could not force the outer radial portion of the heads inwardly so that they would be inclined toward each other.

Thus the Peterson beam could not be used effectively with tire-fabric yarn, nor could it be used for an extremely dense winding of yarn of the more usual type.

That there is a demand for beams that can be used in the manner and with the yarns specified on pp. 4 and 5 hereof is clearly shown by the last paragraph of applicant's tender of facts on p. 5 of this brief.

Inasmuch as there is not one word in the Marcy and Taft specifications concerning the *desirability* of preventing the spreading of the heads, or of flexing the outer portions thereof inwardly to permit the use of extremely heavy yarns, it would seem to be obvious that a skilled worker could obtain from them no information whatever that would be of the slightest use to him in modifying Peterson in such a way that applicant's result could be effected.

The discs of Marcy and Taft are "independent of and separable from" the heads but to apply this feature to Peterson would necessarily involve the complete reorganization of the latter. Not only would the spot-welds 4 have to be eliminated but also the bracing discs 5 would have to be removed, as well as the hubs 7, the ends of which are expanded or spun over "to secure the parts of the head rigidly together" (p. 1, line 105), and the portion of the shaft C enclosed by said hub would have to be threaded and the central aperture of the disc enlarged so that when the nut 18 was further tightened such central portion would be forced over the shaft inwardly in order that additional pressure would be transmitted by the peripheral portion of the disc 3 to the head.

86 These changes in a device which depends for its operativeness upon the rigid truss-like construction above-mentioned, were not within the purview of the patentee and nothing in the Marcy and Taft patents would tell the skilled worker that these changes were desirable, much less instruct him in the manner of making them.

By a long line of harmonious decisions the principle has been established that the mere fact that a prior construction *might* be modified to perform a new function is not material to the question of patentability where the prior art neither suggests the desirability of such modification nor teaches how to make the same.

> Dinuba Steel Products Corp. v. Killefer Mfg. Corp, 56 Fed. (2d) 848, 850.

"An examination of them (the prior patents set up in the answer) shows that none of the earlier devices performs its function in the same way as the Petzoldt device (the device of the patent in suit). Prior structures, which by modification might be made to perform functions of one later patented, are not anticipations, where not designed, adapted to, nor used for such functions". Citing

> Tashjian v. Forderer Cornice Works (C. C. A. 2) 14 Fed. (2d) 414;
>
> Topliff v. Topliff, 145 U. S. 156, 12 S. Ct. 825, 36 L. Ed. 658;
>
> Los Alamitos Sugar Co. v. Carroll (C.C.A.) 173 F. 280.
>
> Peters Co. v. MacDonald, 425 O. G. 214 (C.C.A. 2), last paragraph, second column, page 214:
>
> "It is not sufficient to constitute an anticipation
> 87 to say that by modification the function of the patent in suit might be accomplished". Citing—
>
> Topliff v. Topliff, 145 U. S. 156, 12 S. Ct. 825, 36 L. Ed. 658,
>
> Diamond Rubber Co. v. Consolidated Rubber Co, 220 U. S. 428, 31 S. Ct. 444, 55 L. Ed. 527.
>
> Anderson & Writer Corp. v. Hanky Beret, Inc, 425 O. G. 429, 431, CCA 2, (sentence beginning line 4 from the foot of the first column, p. 431):

"To modify Kiwad (patent set up in the answer) to do the work of Writer (patent in suit) would so change the purpose and design of his patent that it cannot be an anticipation''. Citing—

> Metropolitan Device Corp. v. Williamsburg Electric Supply Co. (C. C. A.) 19 Fed. (2d) 442,
> Block v. Nathan Anklet Support Co. (C.C.A.) 9 Fed. (2d) 311.

Applicant believes that this doctrine has always been followed by the Appellate Tribunals of the Patent Office,—see for example

Ex parte Gee, 261 O. G. 800, first paragraph, p. 801.

''* * * In order to negative invention it is necessary to find in the prior art not only a device which might be modified to make this construction, but somewhere a suggestion not only that the modification ought to be made but how to make it''.

88 *Substitution of Equivalents.* Whether the ground of rejection be Marcy in view of Peterson or Peterson in view of Marcy, the combination of the two references is not justified unless there is in one structure an equivalent of an element in the other.

As above stated the discs of Marcy (Taft) perform only the function of securing the heads to the barrel and affording bearing plates for the gudgeons.

In Peterson, however, the discs 3 do not perform said functions. As will be clear from the Peterson specification beginning line 93, p. 1, the head A is a rigid truss-like structure consisting of the main disc 1, the bracing disc 3 spot-welded thereto at 4, the internal bracing disc 5 spot-welded to disc 1 at 6, the disc 9 spot-welded to the disc 1 at 12, the hub 7, the ends of which are ''expanded or spun over to secure the parts of the head rigidly together'' and the spacing sleeve 8. The beam-head so formed ''is clamped tightly against the end of the barrel by a nut 18 turned on a screw-threaded portion of the shaft C''.

The discs of Marcy (Taft) are therefore the equivalents of the nut 18 of Peterson because they perform the same function as said nut in substantially,—in fact identically,—the same way. Thus if Marcy (Taft) is the principal reference, the rejection amounts substantially to the proposition that no invention would be involved in disrupting the built-up head of Peterson by removing therefrom one of its essential elements, the bracing disc 3, and substituting it for the disc L of Marcy or the disc 5 of Taft. If this substitution were made in Marcy there would be nothing to hold the central portion of the head G against the barrel, for the pressure exerted by the peripheral portion of Peterson's disc 3 against said disc G would have the effect of bending the central portion of said disc G away from the barrel.

If such substitution were made in Taft in which the head "may be fastened in place by glue if desired", such glued joint at the shoulder 4 would not suffice to hold the head on the barrel against the force exerted by the periphery of the
disc 3 (Peterson) against the periphery of the head
89 2 (Taft).

On the other hand if Peterson be considered the principal reference the substitution of the Marcy (Taft) disc for the Peterson disc 3 could not be effected without removing the expanded outer end of the hub which Peterson carefully provides to secure the parts of the head rigidly together and the result would be a structure not contemplated by any of the patentees. Furthermore, as above pointed out, the Taft and Marcy discs are ineffective to prevent the spreading of the heads in the respective structures in which they are used and therefore would be equally ineffective if substituted in Peterson for the bracing disc 3.

Adjustable pressure of applicant's discs against the heads. Reverting to the third complete paragraph on page 5, ante, to the effect that the mill operatives sometimes find it desirable to regulate the tension on the discs and the pressure exerted by them on the heads, it will be manifest that this result could not be attained by Taft and Marcy, in both of which the discs serve the purpose only of clamping the heads to the barrel and supporting the gudgeons.

It will be noted in this connection that the heads of the present invention are not secured to the barrel by the discs (p. 10, ante). Thus applicant's discs "being independent of and separable from" the heads, the pressure exerted by the discs against the heads to suit the situations set forth on pp. 4 and 5 hereof is possible. As above stated, there can be no such regulation of pressure in the Peterson beam (p. 11, ante).

Peterson recognized the disadvantage of heads not sufficiently rigid to prevent spreading and explains (p. 1, line

39, et seq) that when such spreading occurs, the warper tender must "adjust the expansion comb and reed at frequent intervals to compensate for the increasing width between the beamheads".

Conceivably, it might be possible to make the heads sufficiently strong and heavy to withstand any imaginable pressure without bending; but as the beams rotate at extremely high speeds it is essential that the weight of the heads be reduced to a minimum.

If the 500-odd pounds of yarn on the Peterson beam absorbs sufficient moisture during a period of high humidity to exert sufficient expansive force on the heads, the latter undoubtedly would spread, with the result stated by Peterson, beginning line 40 on p. 1 of his specification.

Thus Peterson, while solving a part of the problem, did not disclose a complete solution.

By the present invention, as defined by the appealed claims, the spreading of the heads produced, as aforesaid by the absorption of moisture during period of high humidity, can be rectified so that the beam can be used without the frequent adjustment of the expansion comb when the beam is being unwound in the slasher.

This new result ought to carry the claims because there is no more suggestion thereof in Taft and Marcy than there is in Peterson.

It is respectfully submitted that the Examiner ought to be reversed.

Respectfully,

GEO. K. WOODWORTH,
Attorney for Applicant.

Case Submitted on Brief.
No oral hearing desired.

May 24 1934

91 U. S. Patent Office Board of Appeals Mailed Jul 3—1934

Appeal No. 11,743 Paper No. 18
Decision.

Appeal No. 11,743 OVT

In the United States Patent Office

Ex parte Ray U. Thornton

Application for Patent filed July 12, 1932, Serial No. 622,059. Section or Warper Beams.

Mr. George K. Woodworth for applicant.

This is an appeal from the action of the examiner finally rejecting claims 9 and 10.

Claim 9 is illustrative:

9. A section beam comprising a shaft, a barrel and a pair of heads mounted on said shaft, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter and in threaded engagement with said shaft, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel and means for locking each said disc against axial movement with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.

The references relied upon are:

Marcy	455,224	June 30, 1891
Peterson	1,484,154	Feb. 19, 1924
Taft	1,490,864	Apr. 15, 1924

The two claims on appeal are drawn particularly to the modified construction of applicant's warper beam illustrated in Fig. 3 of the application drawings. In this
92 figure there is shown a concaved disk having a central opening provided with threads which engage threads on the central shaft. The concave side of the disk is adjacent the outer face of the head and consequently the outer edge of the disk contacts with the head some distance

from the shaft to laterally support the head. The circular line of contact has a diameter which is somewhat greater than the diameter of the barrel. The disk is held in its adjusted position by means of a lock-nut which is threaded on the shaft outside the disk.

The patent to Marcy discloses a construction in which a short spindle N is mounted in the end of the barrel, instead of one in which a single shaft extends throughout the length of the barrel as in the application. A concaved disk L has threaded engagement with the spindle and is clearly illustrated as bearing against the side of the head at a distance from the axis of the barrel which is greater than the radius of the latter. The unthreaded portion of the spindle, like applicant's lock-nut, prevents the disk from being turned backwardly from its clamping position.

The patent to Taft discloses a construction quite similar to that in Marcy but one in which the concaved disk 5 abuts against a shoulder on the spindle instead of having screw threaded engagement with the spindle.

The patent to Peterson discloses a beam having a central shaft C which extends throughout the length of the beam and the end portions of which are threaded to receive the nuts 18. Each head is laterally supported by a concaved disk 3 which is shown as engaging the side face of
93 the head near its periphery instead of adjacent the
barrel as in the application and in the patents to Marcy and Taft. The disk 3 instead of being a separable element as in the application and the patents to Marcy and Taft is rigidly connected to the head.

The examiner has rejected claim 9 on the patent to Marcy taken in connection with the patent to Peterson. He has rejected claim 10 which is broader than claim 9 in that it does not require the disk to have screw threaded engagement with the shaft, on either Marcy or Taft taken in connection with the patent to Peterson.

Applicant urges that the concaved disks in Marcy and Taft are not of sufficient diameter to accomplish his function of laterally bracing the head. The examiner points out that the disks are clearly shown as being of greater diameter than the barrel and there is no reason for supposing that the showing in this respect is not intentional. However this may be, it clearly follows from the disclosure of the disk 3 in Peterson that no invention would be involved in making the disks in Marcy and Taft of still greater diameter than illustrated in these patents. It also seems clear to us that no invention would be involved in the provision of a single central shaft in lieu of the two stub shafts or spindles illustrated in these patents to Marcy or Taft in view of the disclosure of the shaft C in Peterson. Applicant's arguments have been carefully considered but we are persuaded that the two claims on appeal are not allowable over the references relied upon by the examiner.

94 As to the request contained on page 1 of the brief in regard to amending the specification, we do not find it necessary in passing upon the claims to make any recommendation concerning the proposed amendment.

The decision of the examiner is affirmed.

BOARD OF APPEALS
W. S. RUCKMAN
Examiner-in-Chief
EUGENE LANDERS
Examiner-in-Chief
H. EDINBURG
Examiner-in-Chief

July 3, 1934

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95 Address only
The Commissioner of Patents
Washington, D. C.

Department of Commerce
United States Patent Office
Washington

Ex parte RAY UDELL THORNTON, Serial No. 622,059, Filed July 12, 1932, Section or Warper Beams.

Notice of Suit Under Section 4915 R. S.

A suit in Equity under Section 4915 R. S., entitled Ray U. Thornton vs. Conway P. Coe, Commissioner of Patents, Equity No. 58,120, involving this application, was filed on December 31, 1934, in the Supreme Court of the District of Columbia.

T. A. HOSTETLER
Solicitor.

December 31, 1934.

SPECIAL
CASE PENDING OVER
3 YEARS

1932

CONTENTS:

1. Application papers.
2. REJECTION DEC 12 1932
3. A JAN 20 1933
4. Letter
5. REJECTION APR 24 1933
6. AMENDMENT B MAY 31 1933
7. Office Letter JUN 2 1933 C
8. Letter JUN 5 1933
9. REJECTION AUG 21 1933
10. AMENDMENT C SEP 1 - 1933
11. REJECTION DEC 6 - 1933
12. AMENDMENT D JAN 11 1934
13. Final Rejection APR 17 1934
14. Appeal to Board Apr. 27/34
15. Examiner's Statement MAY 11 1934
16. [illegible] JUL 18 1934
17. [illegible] MAY 25 1934
18. DECISION BY BOARD JUL 3 - 1934
19. Notice of Suit under Section 4915 R.S. Dec 31-1934
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21. Do not hold abandoned
22. Not up for action
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Special
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Appeal
held not abandoned

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622059 DIV 61
8 Sheets Sheet 1

29a/711

Fig.1.

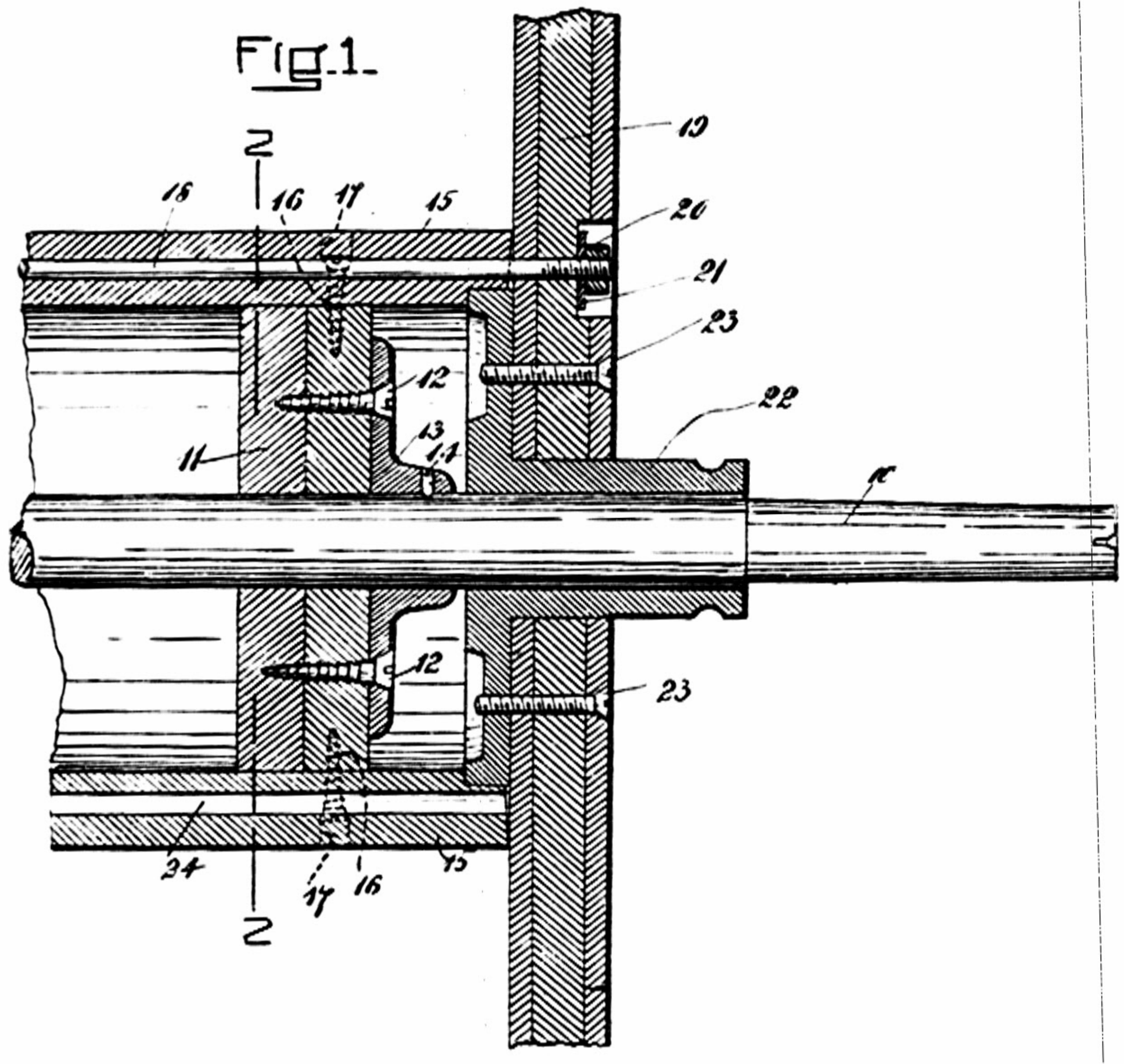
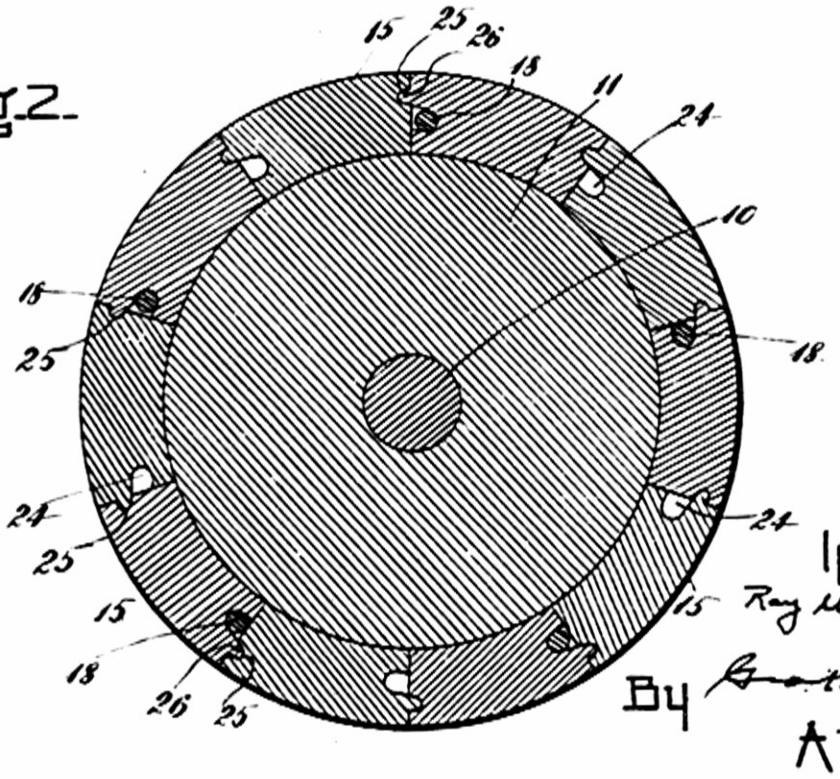


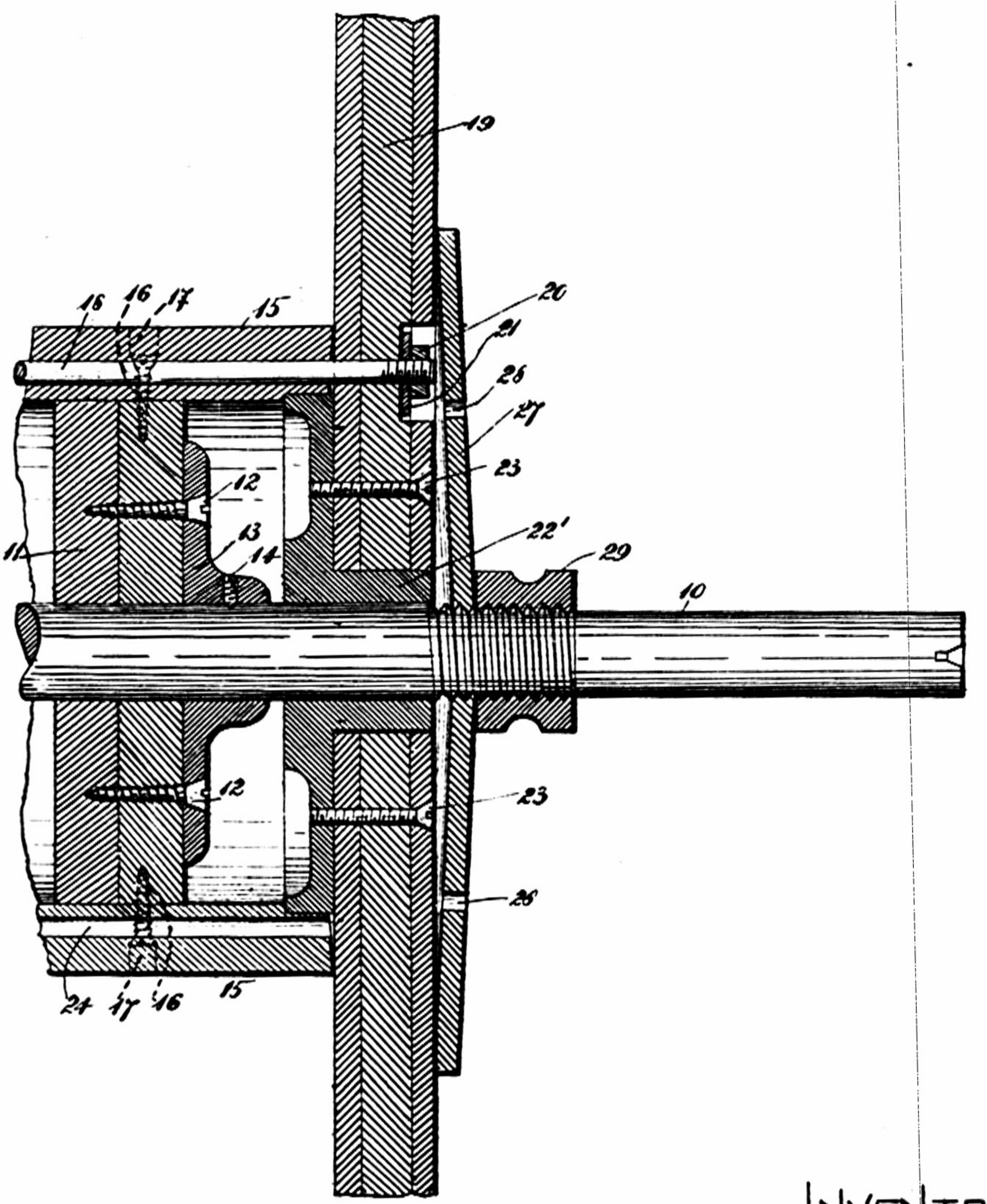
Fig.2.



INVENTOR:
Ray Mitell Thornton
By Geo. K. Woodworth
ATTORNEY:

Serial No 622059 . DIV. 51
2 Sheets Sheet 2

Fig. 3.



6½

INVENTOR=
Ray Udell Thornton
By Geo. K. Woodworth
ATTORNEY=

Assembled by S. R., Revised by ————
Letter No. 32740, Date 8-25-36

Fig.1.

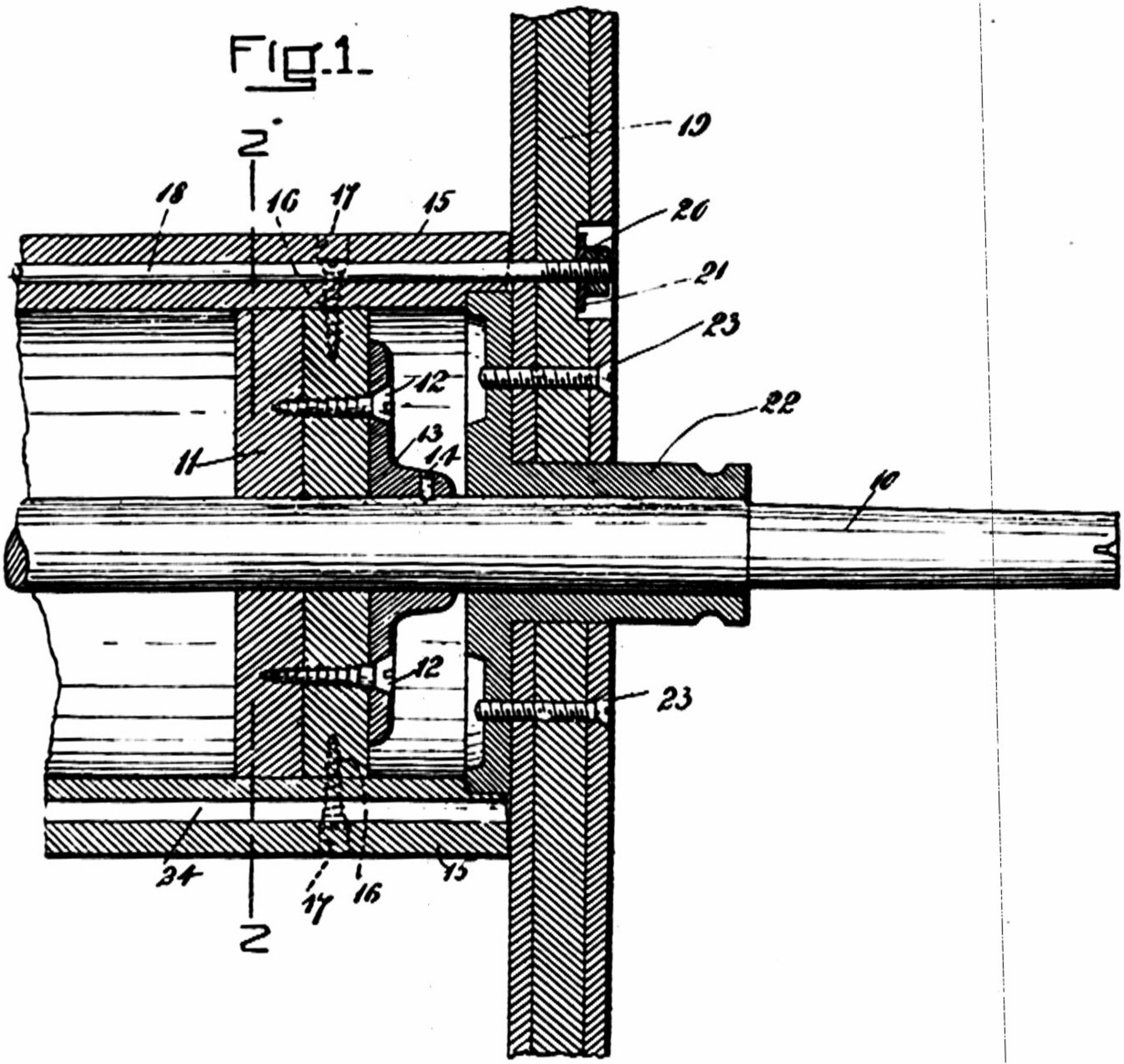
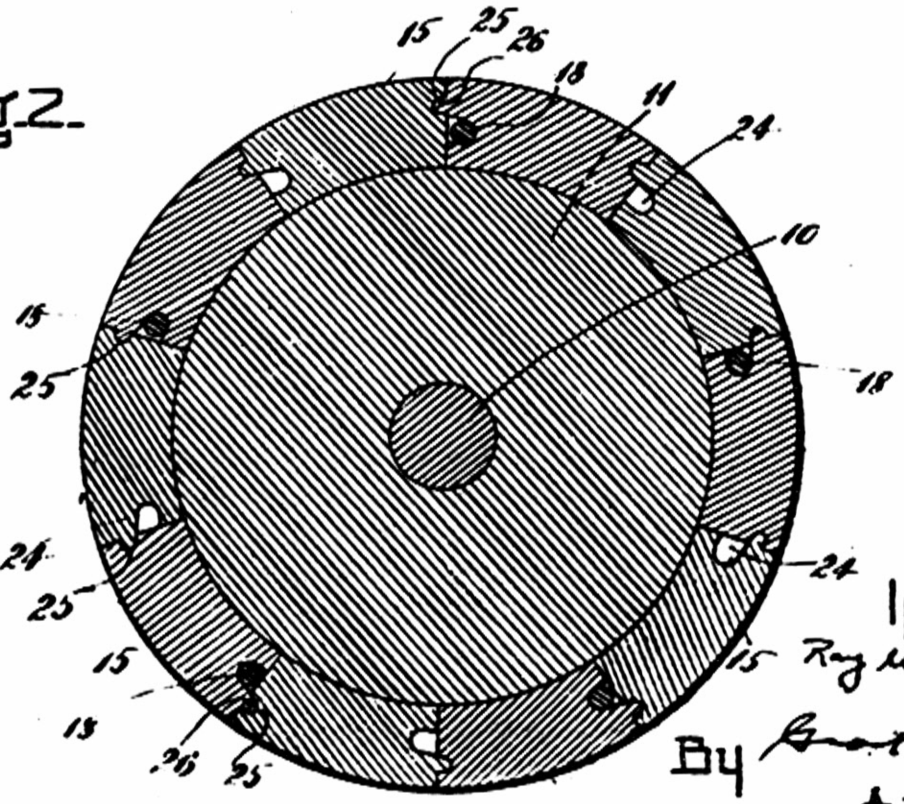


Fig.2.

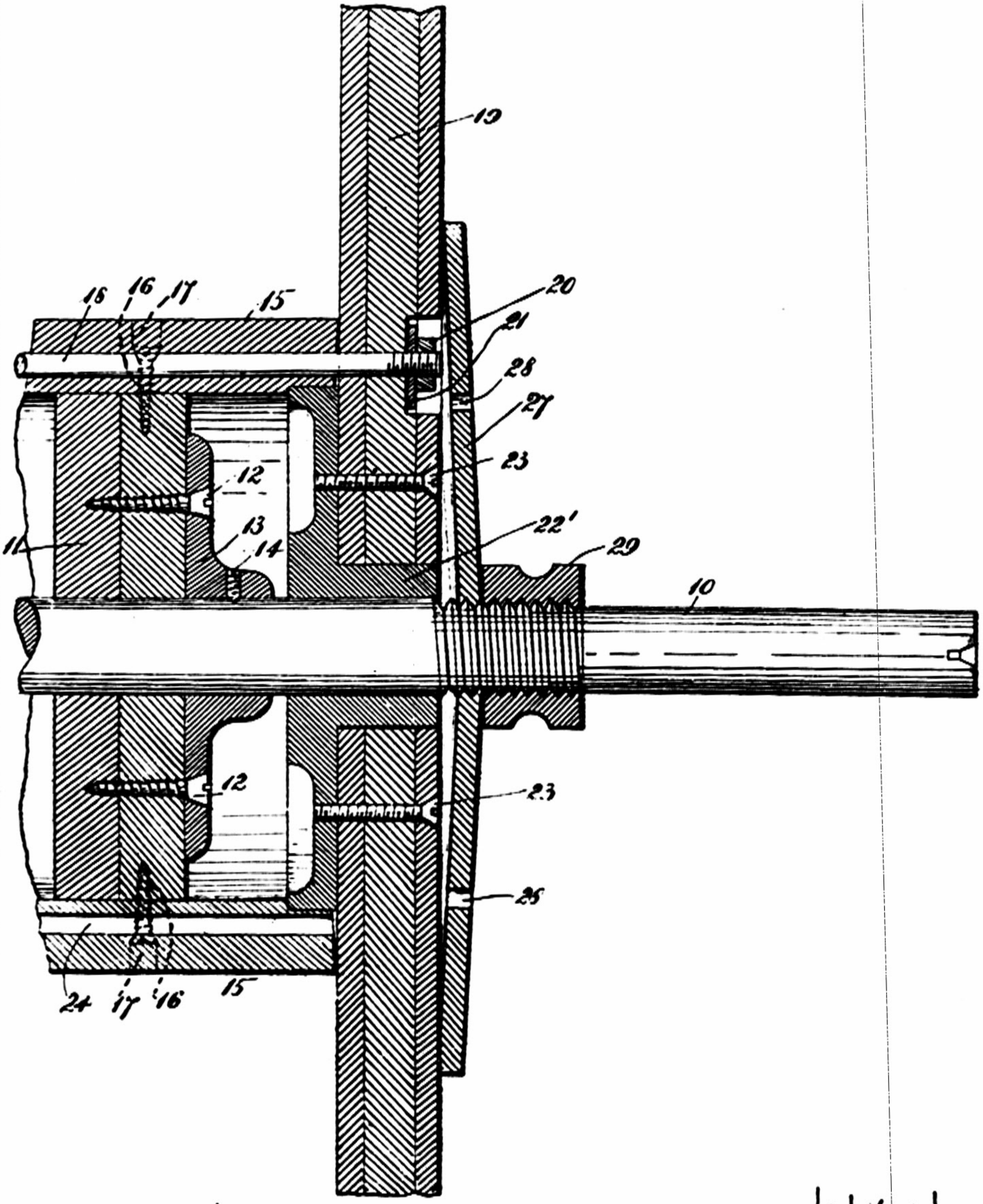


INVENTOR:
Ray Udell Thornton

By Geo. K. Woodworth

ATTORNEY:

Fig. 3.

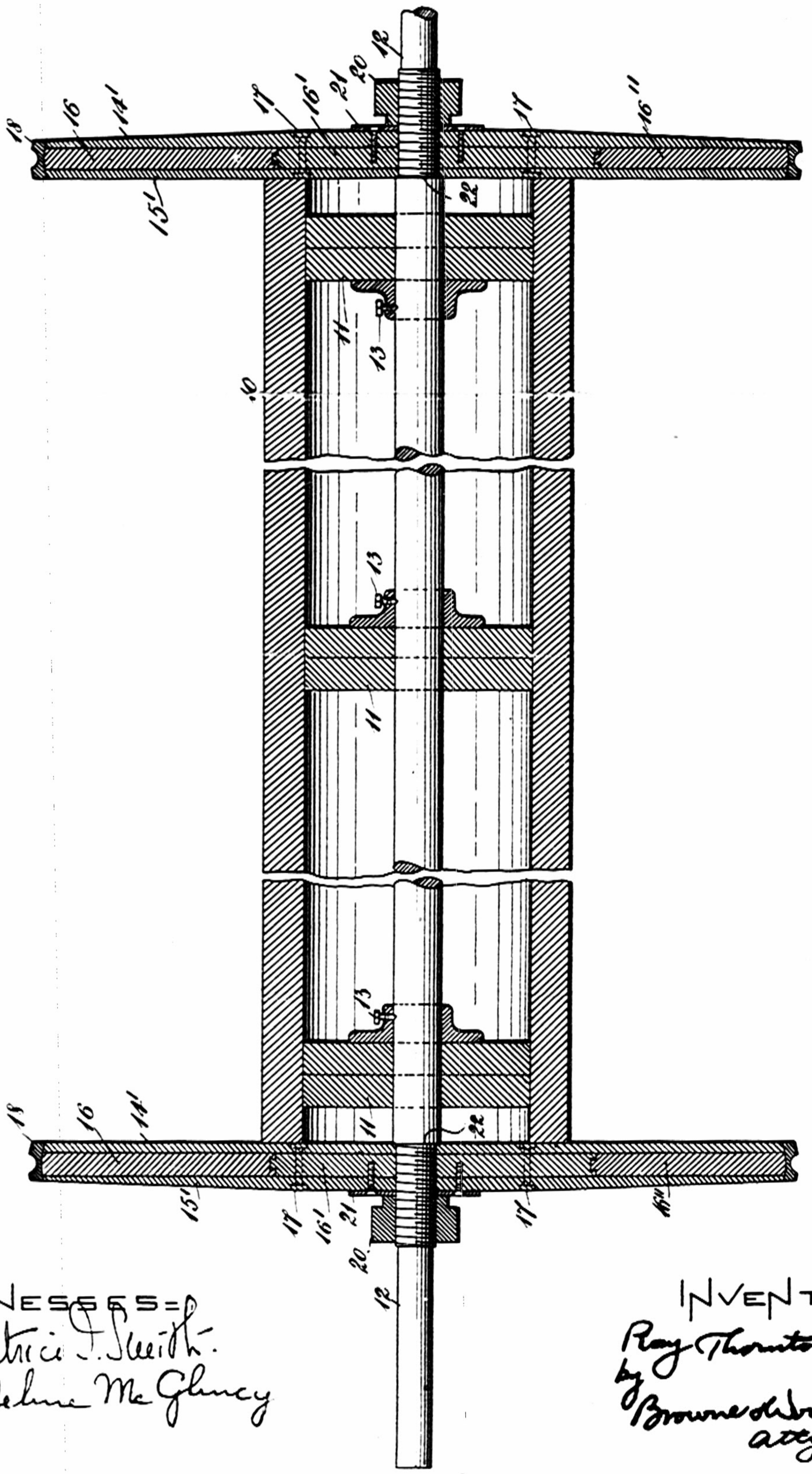


INVENTOR:
Ray Udall Thornton
By Geo. K. Woodworth
ATTORNEY:

R. THORNTON.
SECTION BEAM HEAD.
APPLICATION FILED SEPT. 2, 1914.

1,239,744. Patented Sept. 11, 1917.
2 SHEETS—SHEET 1.

FIG-1-



WITNESSES:
Beatrice T. Smith
Madeline McGlincy

INVENTOR:
Ray Thornton
by
Browne & Woodworth
attys.

R. THORNTON.

SECTION BEAM HEAD.

APPLICATION FILED SEPT. 2, 1914.

1,239,744. Patented Sept. 11, 1917.

2 SHEETS—SHEET 2.

FIG. 2.

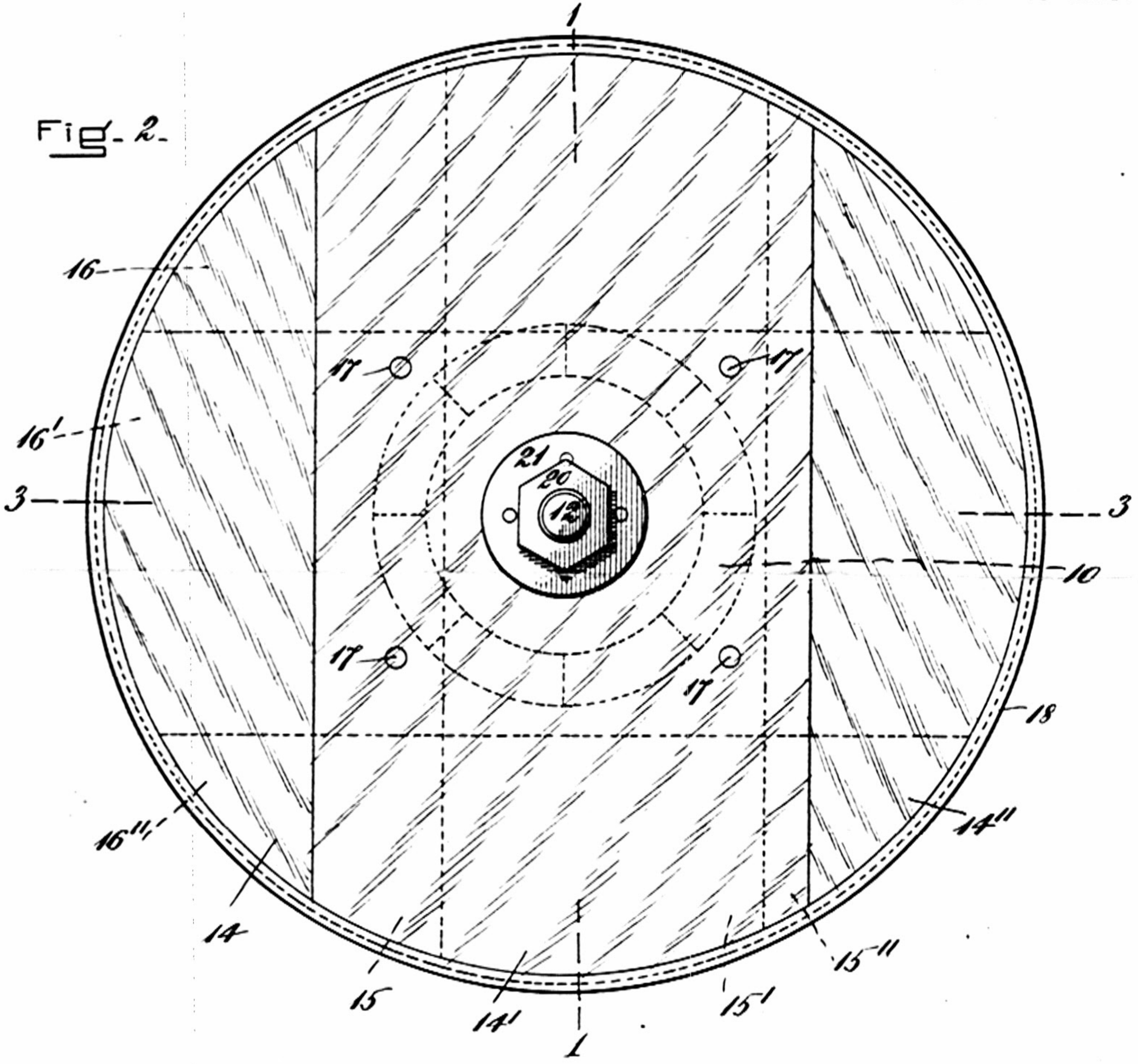


FIG. 3.

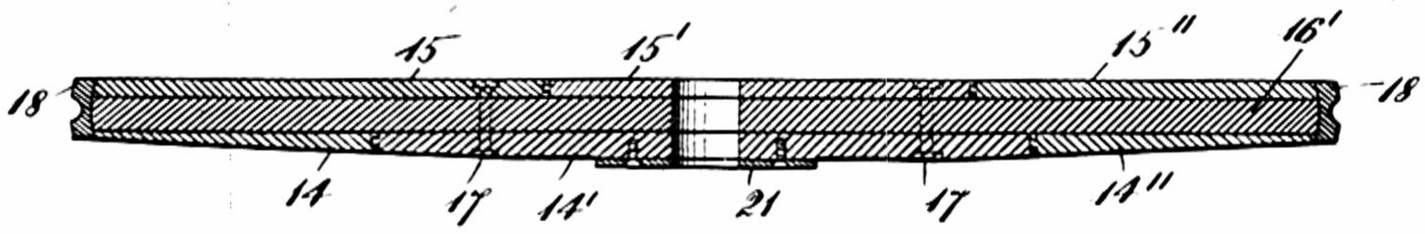
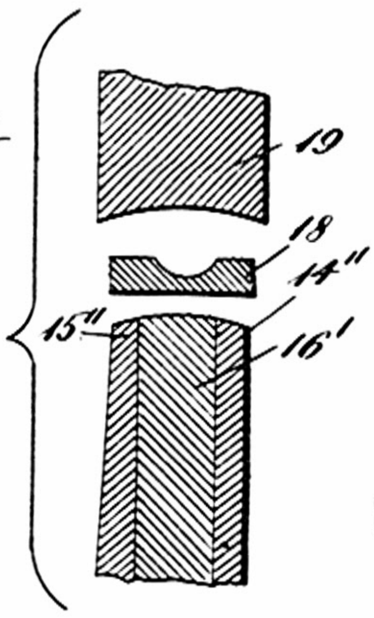


FIG. 4.



WITNESSES:
Beatrice T. Sue.th
Madeline McGlincy

INVENTOR:
Ray Thornton
by
Browne & Woodworth
Attys.

UNITED STATES PATENT OFFICE.

RAY THORNTON, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR TO GEORGE H. H. ALLEN, OF NEW BEDFORD, MASSACHUSETTS.

SECTION-BEAM HEAD.

1,239,744. Specification of Letters Patent. **Patented Sept. 11, 1917.**

Application filed September 2, 1914. Serial No. 859,773.

To all whom it may concern:

Be it known that I, Ray Thornton, a citizen of the United States, and resident of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Section-Beam Heads, of which the following is a specification.

My invention relates to section-beams, used for storing and transporting warp and filling, and more particularly to the construction of the flanges or heads of such beams.

The heads of section beams in most general use, are made of cast iron, and weigh about fifty pounds apiece, thereby greatly increasing the weight of the structure and the cost of shipping the same. It is a matter of common experience that such cast iron beam heads are frequently broken because, in order to reduce their weight, they are made of minimum thickness, and also that unless great care is taken in the storage and shipping of such beams, the metallic heads cut into and injure the wooden barrels of the beams.

The object of the present invention is to provide a unitary or one-piece beam head that will not be subject to these defects and limitations, and that will be very much lighter in weight than a metal head without sacrificing the strength required for devices of this character.

I attain this object by making the beam head of cross-banded wood as hereinafter more fully set forth, and while I am aware that wooden beam heads have heretofore been proposed, experience has shown that they have not proven satisfactory in practice, and that they have never gone into commercial use.

My invention will be described by a reference to the drawings which accompany and form a part of this specification and which illustrate a type of wooden beam head which has proven to be a satisfactory and practical substitute for the metallic heads of the prior art.

In the drawings:—

Figure 1 is a longitudinal central section of my improved section-beam, taken on the line 1—1 of Fig. 2;

Fig. 2 is an end view;

Fig. 3 is a section of the beam head taken on the line 3—3 of Fig. 2; and

Fig. 4 is a fragmentary view illustrating one way in which the rim may be applied to the beam head.

In the particular drawings selected for more fully disclosing my invention, 10 represents the barrel made up, as usual, of a number of slats secured to the disks 11 which in turn, are mounted on the shaft 12 by the set screws 13 or other appropriate means. It is to be understood, however, that my improved beam head or flange may be used with any type of section-beam.

The beam heads are each formed of a plurality of layers of wood preferably three in number as shown, and each layer consists of a plurality of bands herein shown as three in number. The outer bands 14, 14′, 14″, and 15, 15′, 15″, are united at their meeting edges preferably by dovetailing, and are secured to the inner bands 16, 16′, 16″ by gluing under pressure in the usual well-known manner, or in any other suitable way. To strengthen the structure, the rivets 17 may also be employed. For the bands, I prefer to use rock maple or other tough resilient wood, although I do not limit myself to any particular kind of wood. Preferably, the bands of one layer have a different direction from those of the other or others, and as shown in Fig. 2, the inner bands are arranged at right angles to the outer bands. The dovetailed joints between the bands of one of the outer layers are preferably out of line with the joints of the other outer layer. The beam head is provided with a rim 18 grooved to receive the restraining cord employed when the thread is being unwound, and preferably said rim is so constructed as to clamp the outer edges of the several layers for the purpose of binding them together. This may be accomplished by making the cross section of the outer edge of the head arc-shaped, and clamping the rim on said outer edge by means of a cold tire setting machine, the jaw of which is shown at 19, in Fig. 4. The metallic rim 18 not only binds the layers together at their outer edges but protects the edge of the beam-head from abrasion and prevents moisture from entering the wood through the pores in the edge. It will be understood, however, that other means may be employed for binding the layers together at their outer edges, and that if a metallic rim be used for this purpose it need not be arc-shaped as shown and may be suitably shaped to perform this function.

The head or flange is applied to the beam in the usual manner by means of nuts 20 threaded to the shaft, and bearing against the washers 21 secured to the head, thereby forcing the head against the barrel and the shoulder 22 of said shaft.

It has been practically demonstrated that beam heads constructed as above set forth, are very much lighter than the metallic heads now in common use, and that they possess such great resiliency that it is practically impossible to break them, while at the same time, they can be made much more cheaply than cast iron heads. It has been demonstrated also that said beam heads in addition to being of much lighter weight than the metallic heads of the prior art, can be perfectly balanced, which, when they are used as loom beams, results in securing an even tension in the winding of fine yarns or warps and also in preventing the beam from having the uneven movement known as "jumping ahead," to which metallic loom beams are commonly subject, such uneven movement resulting in making bad spots in the cloth.

It will be understood that various modifications may be made in the device herein specifically described, and illustrated, without departing from the true scope of my invention.

Having thus described one illustrative embodiment of my invention without, however, limiting the same thereto, what I claim and desire to secure by Letters Patent, is:—

1. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges, the cross-section of the outer edge of said head being arc-shaped, and a metallic rim clamped on said outer edge of said head and binding said layers together.

2. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges, the bands of one layer having a different direction from those of the other or others, the cross-section of the outer edge of said head being arc-shaped, and a metallic rim clamped on said outer edge of said head and binding said layers together.

3. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges, the joints between the bands of one of the outer layers being out of line with the joints of the other outer layer and the cross-section of the outer edge of said head being arc-shaped, and a metallic rim clamped on said outer edge of said head and binding said layers together.

4. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges the bands of one layer having a different direction from those of the other or others, the joints between the bands of one of the outer layers being out of line with the joints of the other outer layer and the cross-section of the outer edge of said head being arc-shaped, and the metallic ring clamped on said outer edge of said head and binding said layers together.

5. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges, the bands of the inner layer being at right angles to those of the outer layers, the joints between the bands of one of the outer layers being out of line with the joints of the other outer layer, and a metallic rim clamped on the outer edge of said head, said rim being so shaped as to bind said layers together.

6. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges, and a metallic rim clamped on the outer edge of said head, said rim being so shaped as to bind said layers together.

7. The combination with a section-beam, of a unitary or one-piece head comprising in its construction a plurality of layers of wood, each layer having a plurality of bands permanently united at their meeting edges, the bands of one layer having a different direction from those of the other or others, and a metallic rim clamped on the outer edge of said head, said rim being so shaped as to bind said layers together.

In testimony whereof, I have hereunto subscribed my name this 31st day of August, 1914.

RAY THORNTON.

Witnesses:
W. T. Read,
H. E. Cushman.

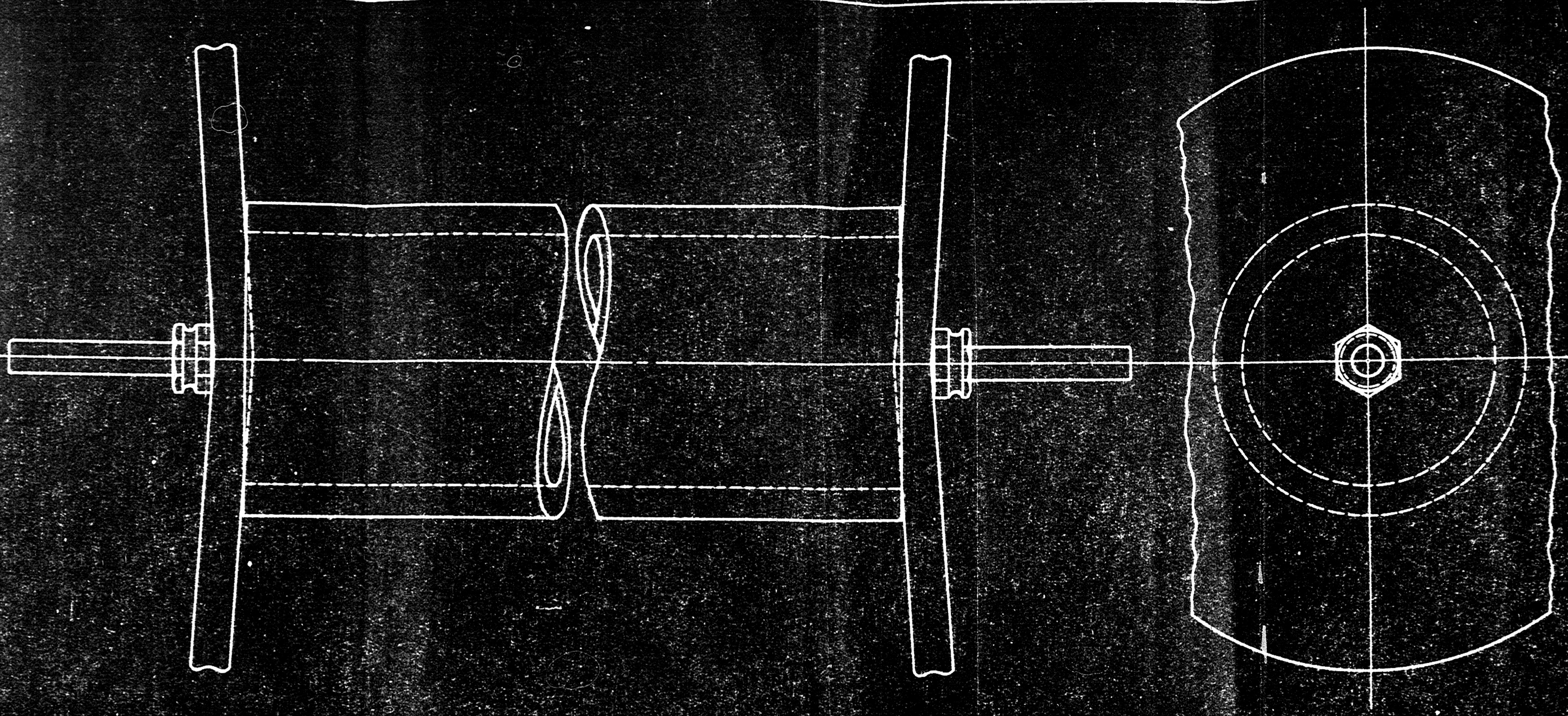


DIAGRAM 1

PLAINTIFFS EXH. NO. 6

NAME OF MILL ALLEN COMPANY
LOCATION NEW BEDFORD, MASS.
SUPT.

ALLEN COMPANY
NEW BEDFORD, MASS.

DATE	ORDER NO.	
FEB. 20, 1937		845

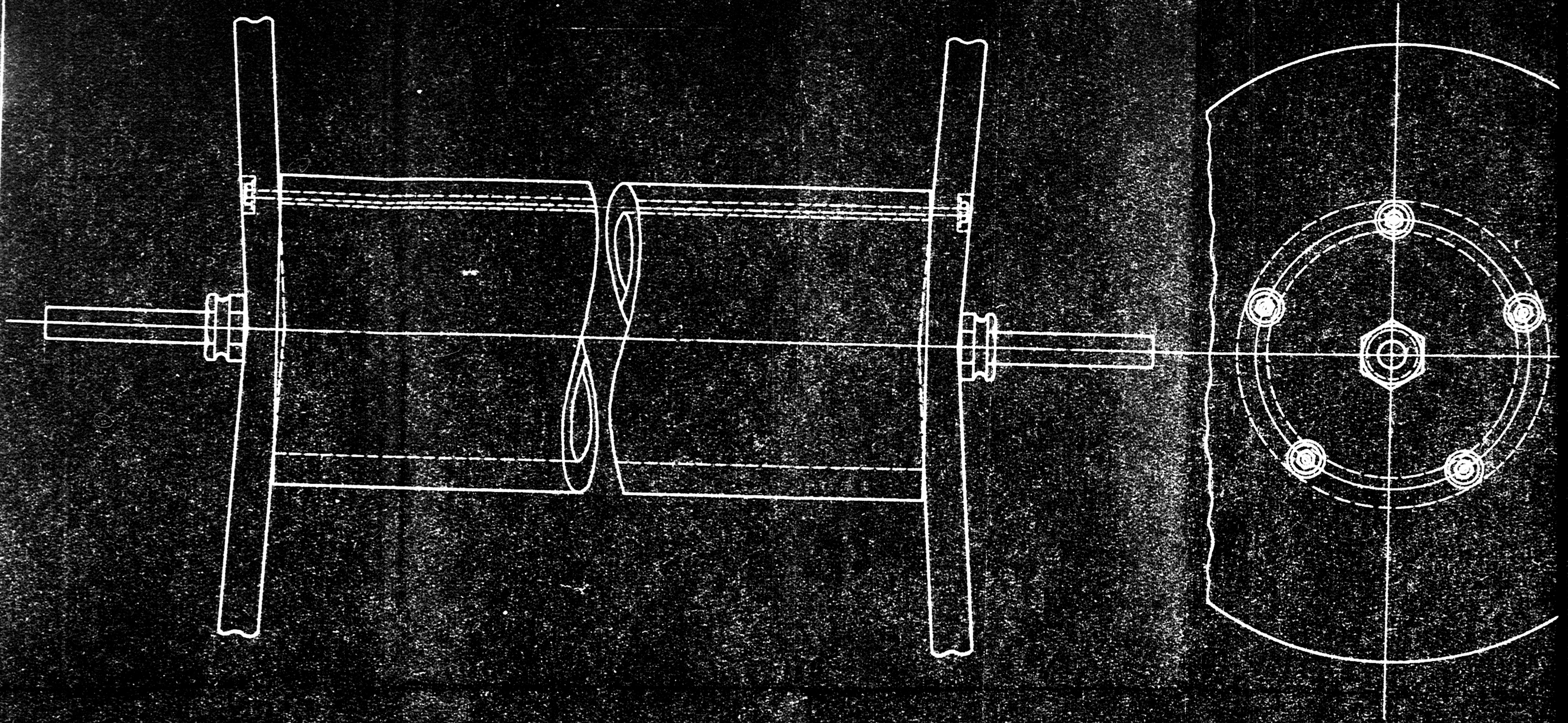


DIAGRAM 1 A

PLAINTIFFS EXH. NO. 7

NAME OF MILL ALLEN COMPANY
LOCATION NEW BEDFORD, MASS.

ALLEN COMPANY
NEW BEDFORD, MASS.

DATE FEB 20 1937
ORDER NO. 846

Feb. 19, 1924. 1,484,154

B. A. PETERSON

WARP BEAM

Filed Jan. 18, 1922

FIG. 1.

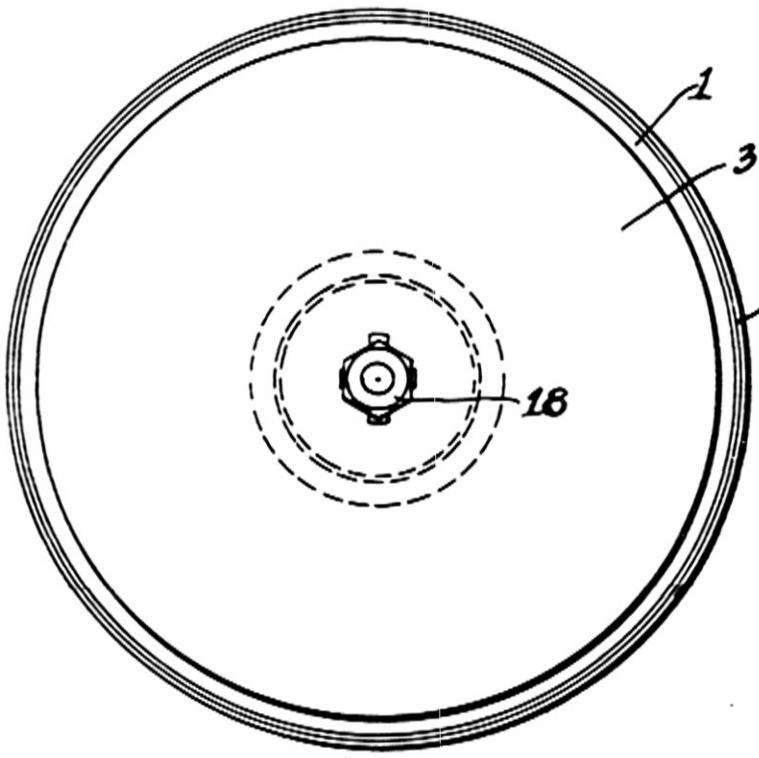


FIG. 2.

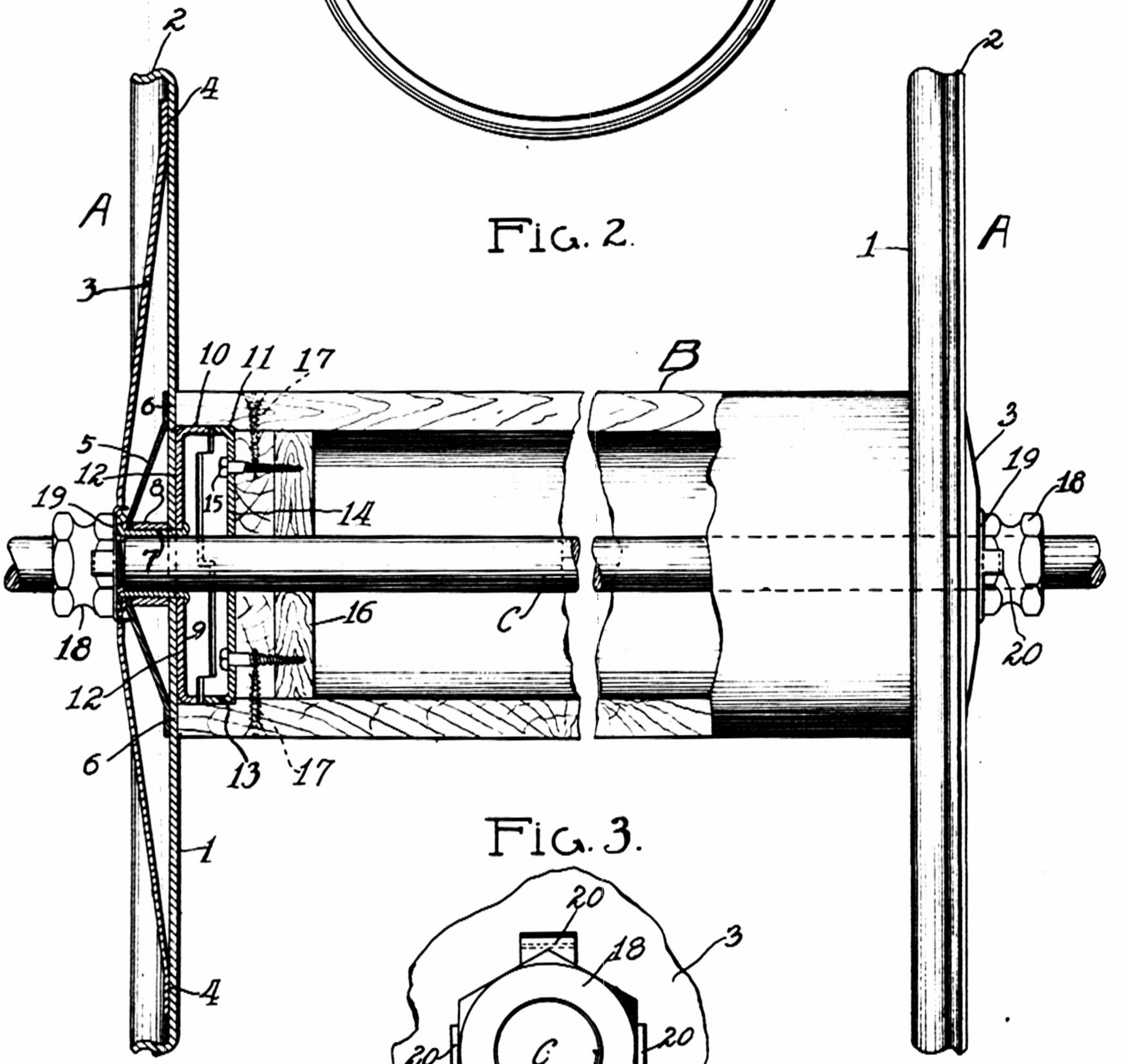
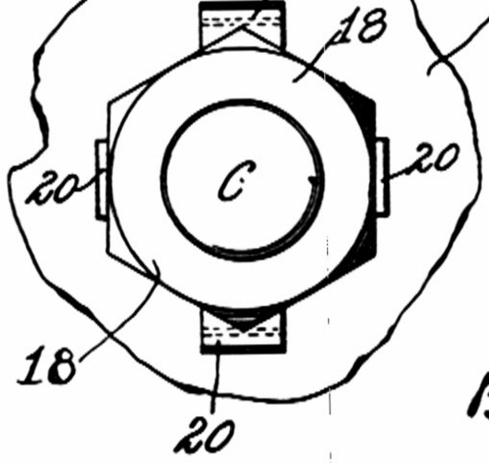


FIG. 3.



Inventor:
Burt A. Peterson
By Chindahl, Parker & Carlson
Atty's.

Patented Feb. 19, 1924. **1,484,154**

UNITED STATES PATENT OFFICE.

BURT A. PETERSON, OF ROCKFORD, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO BARBER-COLMAN COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

WARP BEAM.

Application filed January 18, 1922. Serial No. 530,077.

To all whom it may concern:

Be it known that I, Burt A. Peterson, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Warp Beams, of which the following is a specification.

The general object of the present invention is to produce a section beam which can be safely used in the Barber-Colman warper. This warper is designed to operate at very high speeds as compared with other warpers. The warp beams in common use are provided with cast-iron heads. Inasmuch as these heads sometimes contain casting defects and also are apt to become cracked by reason of rough handling, they cannot safely be rotated at high speed.

It has heretofore been proposed to provide beam heads of the necessary strength by forming them of sheet metal. In order that the heads shall resist the tendency to spreading due to the pressure of the yarn load and shall also possess the rigidity necessary to prevent distortion due to rough handling, they have been provided with radial stiffening ribs formed up from the metal of the head. In the formation of these ribs, corresponding grooves are produced upon the inner faces of the heads. When yarn is being wound upon such a beam, the yarn enters these grooves, the threads rolling over one another and becoming more or less jammed or pinched. Consequently, when the beam is being unwound in the slasher, there is an excessive number of selvedge breaks. Moreover, the beam heads have not been sufficiently rigid to prevent spreading, and hence, it has been necessary for the warper tender to adjust the expansion comb or reed at frequent intervals to compensate for the increasing width between the beam heads.

A particular object of the present invention is to produce a sheet-metal beam head which shall have a perfectly smooth, plane inner face, which shall be effectively braced against the pressure of the yarn load, and which shall possess sufficient strength and resiliency to ensure against breakage and distortion in ordinary handling.

In the Barber-Colman warper, relatively great pressure is applied to the yarn mass by means acting upon the trunnions of the beam. The pressure-applying means thus tends to bend the central shaft or spindle of the beam. It is an object of this invention to provide a construction which shall effectively resist these bending stresses.

In the accompanying drawings, Figure 1 is an end elevation of a warp beam embodying the features of this invention. Fig. 2 is a fragmental side view of the beam with certain parts shown in a section taken along the axis of the beam. Fig. 3 is a fragmental view of one of the securing nuts and the nut lock.

The construction herein shown comprises two metallic heads A, a wooden barrel B, and an axial shaft or spindle C, the projecting ends of which constitute trunnions.

Each beam head A comprises a main disk 1 having a peripheral outwardly-extending flange 2 which is concaved to provide a belt race. The beam further comprises a dished or concave bracing disk 3 of slightly smaller diameter than the main disk 1, the bracing disk being disposed with its concave side facing the outer side of the main disk. The main disk 1 and the bracing disk 3 are suitably secured together, as, for example, by means of an annular series of spot welds 4.

The beam head A further comprises an internal bracing disk 5 of approximately the same diameter as the barrel B. The bracing disk 5 is of dished form and is arranged with its concave side toward the outer side of the main disk 1. The peripheral portion of the disk 5 is secured to the main disk 1 by suitable means, as, for example, an annular series of spot welds 6.

The main disk 1 and the two bracing disks 3 and 5 (together with a clutch element to be hereinafter mentioned) are secured together at their central portions by means of a sleeve or hub 7 which extends through central openings in said members and through a spacing sleeve 8 which is interposed between the main disk 1 and the bracing disk 5. The central portions of the bracing disks 3 and 5 lie in contact with each other. The ends of the hub 7 are expanded or spun over to secure the parts of the head rigidly together. The hub 7 is of such internal diameter as to fit upon the central shaft C.

The means for preventing relative movement between the beam head A and the barrel comprises a disk 9 having a peripheral flange 10 which fits within a counterbore 11 in the end of the barrel. The disk 9 is secured to the inner face of the main disk 1 by means of spot welds 12. It will be seen that the flange 10 serves to support the barrel B in concentric relation to the shaft C. The flange 10 is formed to provide a series of clutch jaws adapted to engage similar jaws formed upon the peripheral flange 13 of a disk 14. The flange 13 fits within the counterbore 11. The disk 14 is secured by means of lag screws 15 to a wooden head 16 on the central shaft C, said head being secured to the barrel B by means of screws 17.

The beam head A is clamped tightly against the end of the barrel B by a nut 18 turned on a screw-threaded portion of the shaft C. To lock the nut against rotation, a washer 19 is interposed between the nut and the head, said washer having lugs 20, certain of which are bent to lie in openings in the bracing disk 3, the remaining lugs being bent into engagement with the perimeter of the nut.

It will be apparent that the beam head construction herein disclosed is relatively light, provides the necessary strength to resist centrifugal force, and is also sufficiently rigid to prevent spreading due to the pressure of the yarn load. By reason of the use of sheet metal and the system of bracing herein described, the beam head is not apt to be damaged by rough handling.

The disk 5, the spacing sleeve 8 and that portion of the disk 1 which lies within the circle defined by the barrel may be viewed as a truss consisting of the compression member 5, the chord or tension member 1 and the strut 8. It will be seen that this truss imparts great rigidity to that portion of the beam head which is clamped between the nut 18 and the barrel B and prevents any bending of the beam head in that region. Likewise, the disks 1 and 3 and the sleeve 8 constitute a truss which effectively resists forces tending to spread the beam heads apart. While the form of truss herein disclosed serves its intended purposes very well, other forms of trusses and other means of spacing the disks 1 and 3 apart and of securing said disks together may be employed without departing from the scope of the invention hereinafter claimed.

The clutch flanges 10 and 13 being relatively remote from the axis, are advantageously located to resist that tendency to relative rotation between the barrel and the head which occurs upon sudden stoppage of the rapidly rotating beam.

The construction shown is well calculated to prevent bending of the shaft C. There is consequently no liability of movement between the head and the barrel which might result in the opening of a crevice between said parts.

I claim as my invention:

1. A warp beam having, in combination, a barrel and a metallic head, said head comprising a main disk having a peripheral outwardly-extending belt-race flange, a bracing disk the periphery of which is rigidly secured to the main disk near the periphery of the latter, an internal bracing disk the periphery of which is secured to the main disk opposite the end of the barrel, a spacer sleeve between the main disk and the internal bracing disk, and a hub extending through said sleeve and through central openings in said disks, the ends of said hub being expanded to secure the disks and the spacer sleeve rigidly together.

2. A warp beam having, in combination, a barrel and a metallic head, said head comprising a main disk, a bracing disk the periphery of which is rigidly secured to the main disk near the periphery of the latter, an internal bracing disk the periphery of which is secured to the main disk opposite the end of the barrel, means to space the main disk and the internal bracing disk apart, and means to secure the central portions of the disks rigidly together.

3. A warp beam having, in combination, a barrel and a metallic head, said head comprising a main disk, a bracing disk the periphery of which is rigidly secured to the main disk near the periphery of the latter, a spacer sleeve between the main disk and the bracing disk, and a hub extending through said sleeve and through central openings in said disks, and means on the ends of said hub to secure the disk and the spacer sleeve rigidly together.

4. A warp beam having, in combination, a barrel, two metallic heads and an axial shaft, said heads comprising a main disk, a dished bracing disk the periphery of which is rigidly secured to the outer face of the main disk, a spacer sleeve between the central portions of the main disk and the bracing disk, and a hub extending through said sleeve and through central openings in said disks and secured to the disks, said hubs fitting upon the axial shaft, and the projecting ends of the latter constituting the trunnions of the beam.

5. A metallic beam head consisting of a main disk, a bracing disk having its periphery rigidly secured to the outer side of the main disk, a disk secured to the inner side of the main disk and having a peripheral flange carrying clutch jaws, a spacer sleeve between the main disk and the bracing disk, and a hub extending through said sleeve and through central openings in said disks, the ends of said hub being expanded to secure said disks rigidly together.

6. A metallic beam head consisting of a main disk, a bracing disk having its periphery rigidly secured to the outer side of the main disk, a disk secured to the inner side of the main disk and having a peripheral flange carrying clutch jaws, a spacer between the main disk and the bracing disk, and means to secure said disks and spacer rigidly together.

7. A warp beam having, in combination, a barrel and a metallic head, said head comprising a disk having a plane inner face, a dished bracing disk, the periphery of which is rigidly secured to the main disk near the periphery of the latter, an internal dished bracing disk, the periphery of which is secured to the main disk opposite the end of the barrel, a spacer sleeve between the main disk and the internal bracing disk, and means to secure the main disk, the bracing disks and the sleeve together.

8. A warp beam having, in combination, a barrel and a metallic head, said head comprising a disk having a plane inner face, a dished bracing disk the periphery of which is rigidly secured to the main disk near the periphery of the latter, an internal dished bracing disk, the periphery of which is secured to the main disk opposite the end of the barrel, a strut between the main disk and the bracing disks, and means to secure the main disk, the bracing disks and the strut together.

9. A warp beam having, in combination, an axial shaft, a barrel of large diameter as compared with the shaft, and two metallic heads mounted on said shaft, each head comprising a disk having a plane inner face, a dished bracing disk the periphery of which is rigidly secured to the main disk, a strut between the main disk and the bracing disk, and means to secure the shaft, the main disk, the bracing disk and the strut together.

10. A warp beam having, in combination, a barrel having a counterbore in its end, a head clamped to the end of the barrel, an annular flange on the inner face of the head lying in said counterbore, and a disk within and secured to the barrel, the last mentioned disk having an annular flange lying in said counterbore, said flanges having coacting clutch jaws.

11. A warp beam having, in combination, a barrel having a counterbore in its end, a head clamped to the end of the barrel, an annular flange on the inner face of the head lying in said counterbore, said flange having clutch jaws, and coacting clutch jaws secured to the barrel.

12. A warp beam having, in combination, a barrel, a head clamped to the end of the barrel, an annular flange on the inner face of the head supporting the end of the barrel, and a disk within and secured to the barrel, the last mentioned disk having an annular flange, said flanges having coacting clutch jaws.

13. A warp beam having, in combination, a barrel and a head, said head comprising a main disk, a dished bracing disk, the periphery of which is rigidly secured to the main disk near the periphery of the latter, an internal dished bracing disk, the periphery of which is secured to the main disk opposite the end of the barrel, a spacer sleeve between the main disk and the internal bracing disk, and means to secure the main disk, the bracing disks and the sleeve together.

14. A warp beam having, in combination, an axial shaft, a barrel of large diameter as compared with the shaft, and two metallic heads mounted on the shaft, each head comprising a main disk, a bracing disk the periphery of which is rigidly secured to the main disk near the periphery of the latter, a bracing member between said disks, the periphery of which member bears against the main disk opposite the end of the barrel, means to secure the disks and said member rigidly together, and means to secure the shaft, the heads and the barrel together.

In testimony whereof, I have hereunto affixed my signature.

BURT A. PETERSON.

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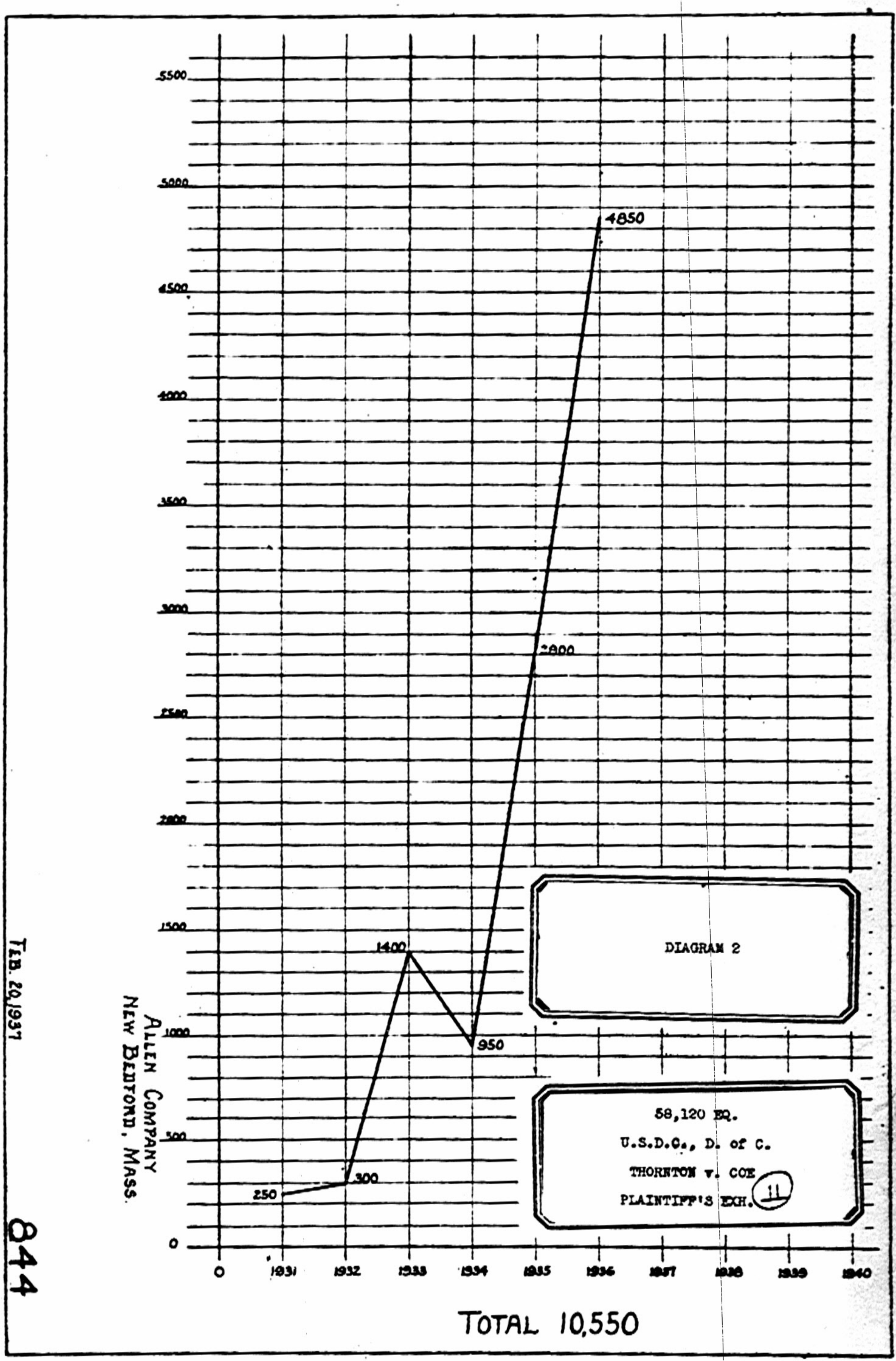


DIAGRAM 2

58,120 EQ.
U.S.D.C., D. of C.
THORNTON v. COE
PLAINTIFF'S EXH. ⑪

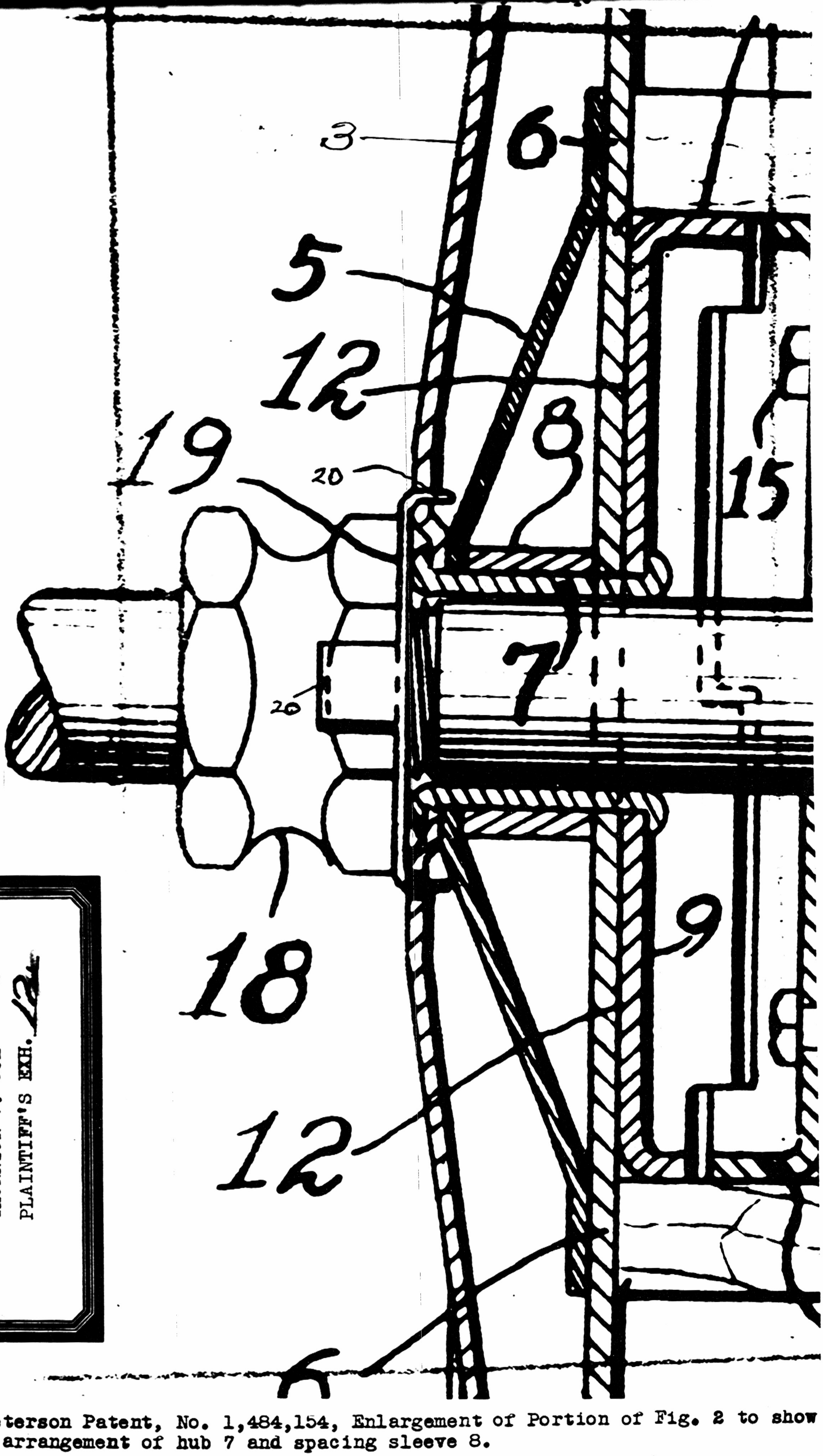
TOTAL 10,550

Allen Company
New Bedford, Mass.

Feb. 20,1937

844

58,120 EQ.
U.S.D.C., D. of C.
THORNTON v. COE
PLAINTIFF'S EXH. 12



Peterson Patent, No. 1,484,154, Enlargement of Portion of Fig. 2 to show arrangement of hub 7 and spacing sleeve 8.

116 In the Supreme Court of the District of Columbia

In Equity No. 58,120

RAY U. THORNTON, *Plaintiff,*
v.
CONWAY P. COE, Commissioner of Patents, *Defendant.*

Stipulation

It is stipulated and agreed by and between counsel that Burt A. Peterson of Rockford, Illinois, if called as a witness would testify to the facts set forth in the annexed affidavit, and that the said facts for the purpose of this case may be taken as true.

GEO. K. WOODWORTH
Counsel for Plaintiff

R. F. WHITEHEAD
Counsel for Defendant

Plf Exh 16

117 In the Supreme Court of the District of Columbia

In Equity No. 58,120

RAY U. THORNTON, *Plaintiff,*
v.
CONWAY P. COE, Commissioner of Patents, *Defendant.*

Affidavit of Burt A. Peterson

STATE OF ILLINOIS,
County of Winnebago, ss.

Burt A. Peterson, having been duly sworn, deposes and says as follows:

I reside at Rockford, Illinois, and am Director of Sales and Development in the Textile Machinery Division of Barber-Colman Company, a corporation of Illinois having its principal place of business at Rockford, Illinois.

I am the patentee named in United States Letters Patent No. 1,484,154, issued February 19, 1924, copy of which marked Exhibit A is annexed hereto. At the request of Ray U. Thornton, President of Allen Company of New Bedford, Massachusetts and plaintiff in the above-entitled cause, I have made careful search of the records of said Barber-Colman Company, assignee of my patent above mentioned, to ascertain certain facts in regard to the beam head disclosed in said patent.

The Barber-Colman Company never manufactured said beam head. The only beam heads manufactured in accordance with said patent were made by Mossberg Pressed Steel Car Company of Attleboro, Massachusetts, for Barber-Colman Company. The Barber-Colman Company's records show that only sixty-four (64) such 118 beam heads were made and that only fifty (50) of them were ever sold to customers. The Company's records do not show the disposition of the remaining fourteen (14) beam heads. It is my belief that they were used in the Barber-Colman Company's plant for shipping yarn to Textile Mills.

The fifty (50) beam heads aforesaid were sold to Pacific Mills of Columbia, South Carolina.

The beam head disclosed in said letters patent was never advertised by Barber-Colman Company and the sale of the same was not pushed by salesmen or otherwise.

I have no interest in the outcome of the above-entitled suit.

BURT A. PETERSON

Subscribed and sworn to before me this 5th day of June, 1936.

DAVIS S. SPRAGUE,
Notary Public.

(Seal)

Peterson Patent omitted here, appears on page 109.

126 District Court of the United States for the District of Columbia

In Equity No. 58,120

RAY U. THORNTON, *Plaintiff,*
v.
CONWAY P. COE, Commissioner of Patents, *Defendant.*

Stipulation

It is stipulated and agreed by and between counsel that the affidavit of John O. Corn in the above-entitled cause, verified the twenty-fifth day of June, 1936 before B. D.

Hughes, a Notary Public of the State of South Carolina, was subscribed and sworn to before the said Hughes in the State of South Carolina and the County of Richland; that the word "Richmond" appearing in the venue of said affidavit is a mere inadvertent clerical error and that said affidavit may be received in evidence with the same force and effect as though the word—Richland—appeared in said venue in lieu of the word "Richmond"; and that a Notary Public of the State of South Carolina has state-wide jurisdiction.

GEO. K. WOODWORTH
Counsel for Plaintiff

R. F. WHITEHEAD
Counsel for Defendant

Plfs Exh 17

127 In the Supreme Court of the District of Columbia

In Equity No. 58,120

RAY U. THORNTON, *Plaintiff*,
v.
CONWAY P. COE, Commissioner of Patents, *Defendant*.

Stipulation

It is stipulated and agreed by and between counsel that John O. Corn of Columbia, South Carolina, if called as a witness would testify to the facts set forth in the annexed affidavit, and that the said facts for the purpose of this case may be taken as true.

GEO. K. WOODWORTH
Counsel for Plaintiff

R. F. WHITEHEAD
Counsel for Defendant

128 In the Supreme Court of the District of Columbia

In Equity No. 58,120

RAY U. THORNTON, *Plaintiff,*
v.
CONWAY P. COE, Commissioner of Patents, *Defendant.*

Affidavit of John O. Corn

STATE OF SOUTH CAROLINA,
County of Richmond, ss.

John O. Corn, having been duly sworn, deposes and says as follows:

I reside at Columbia, South Carolina, and am Superintendent of the Hampton Division of the Pacific Mills, a corporation of Massachusetts, having a usual place of business at Columbia, South Carolina.

About eleven or twelve years ago Pacific Mills purchased from Barber-Colman Company of Rockford, Illinois, fifty (50) beam heads substantially identical with those shown in the patent to B. A. Peterson, No. 1,484,154, issued on February 19, 1924 to said Barber-Colman Company, a copy of which patent, marked Exhibit A, is annexed hereto.

These heads were satisfactory when they were first used but were eventually discarded because they became sprung, that is, the outer portions of the heads from the periphery of the beam (marked "B" in said patent) to their own peripheries (marked "2" in the patent) were bent toward or away from each other, thereby increasing or reducing the distance between said heads, and to make my meaning perfectly clear, I have drawn a line on Fig. 2 of
129 said patent between the two heads and marked the same with the letter "X". It was this distance that was varied by the "spreading" or the "springing" of the heads.

The reason for this spreading or springing was as follows:

After the beams had been filled with yarn at our spinning mills they were transported by truck to our weaving mills, and after they were used in the weaving mills they were sent back by truck to the spinning mills to be refilled with yarn.

The yarn used was the fine yarn employed for weaving sheetings. Each beam would hold about five hundred (500) pounds of such yarn.

Naturally in the shipment of the beams between our plants they were subjected to rough treatment until finally a point was reached at which the heads were so far out of true that they could no longer be used.

The beams above mentioned were not used with heavy yarn, such as three strands of 5-ply No. 23 yarn twisted together for weaving tire fabric, or other types of unusually heavy yarn, and therefore we had no difficulty with the heads springing during the process of filling the same, the yarn with which they were filled being, as aforesaid, the fine yarn used for sheetings.

J. O. CORN.

Subscribed and sworn to before me this 25th day of June, 1936.

B D HUGHES
Notary Public.

(Seal)

Peterson Patent omitted here, appears on page 109.

136 THORNTON VS. COE.

Equity No. 58,120.

A—Marcy, 455,224,

B—Peterson, 1,484,154,

C—Taft, 1,490,864,

D—Print of Drawings,

E—Examiner's Statement,

F—Decision of Board of Appeals.

Defs. Exh. 1

(No Model.)

F. M. MARCY.

SPOOL.

No. 455,224. Patented June 30, 1891.

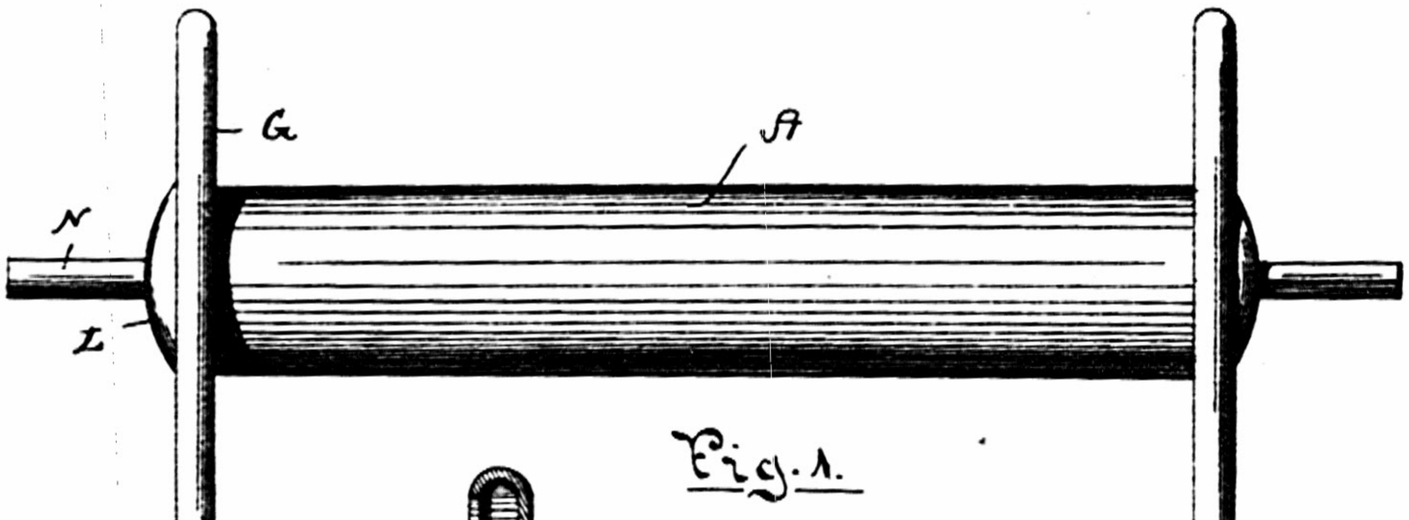


Fig. 1.

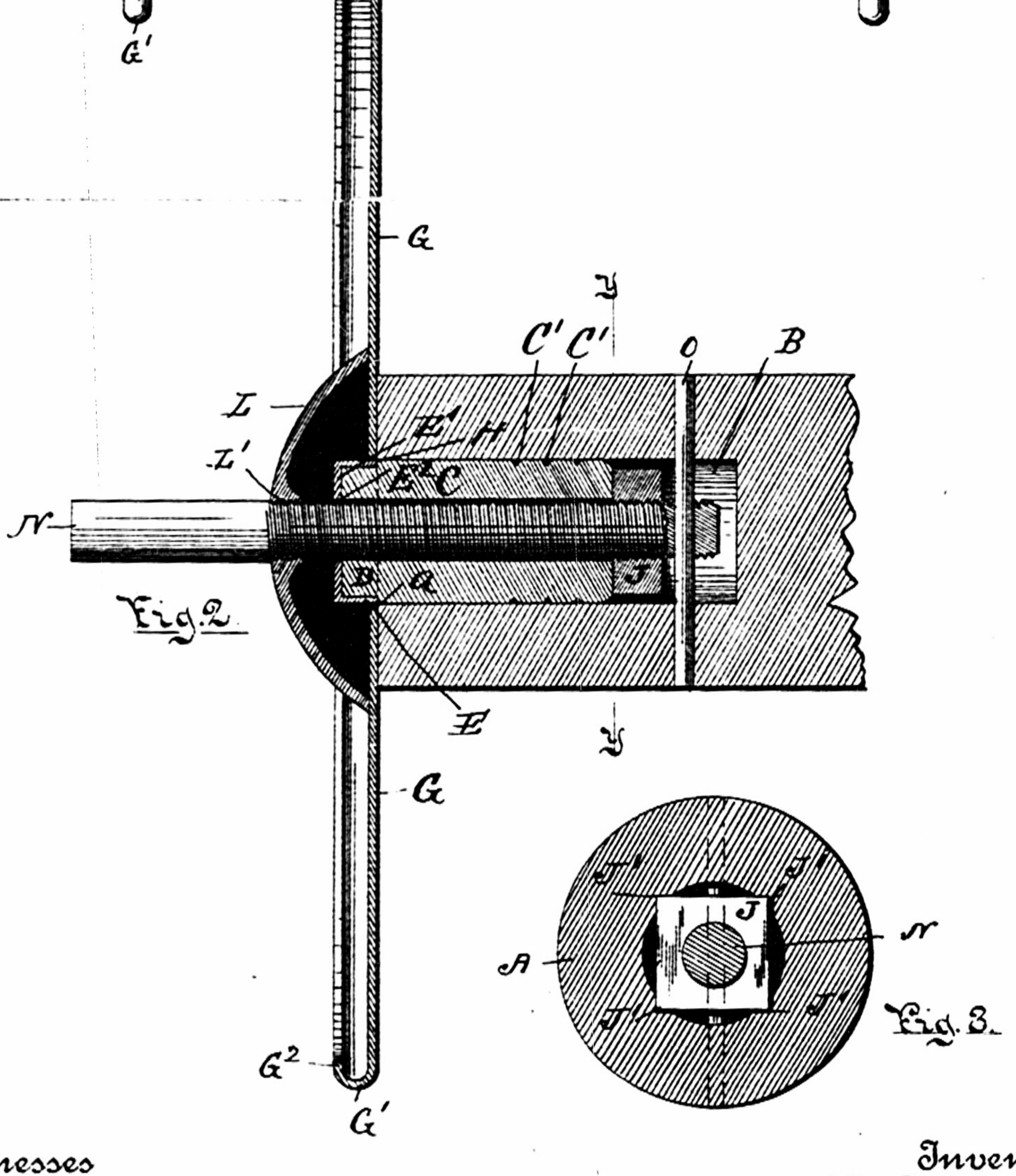


Fig. 2.

Fig. 3.

Witnesses
Walter S. Bowen
H. M. Fowler.

Inventor
Frank M. Marcy.

By his Attorney
Rufus B. Fowler.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

F. M. MARCY.

SPOOL.

No. 455,224. Patented June 30, 1891.

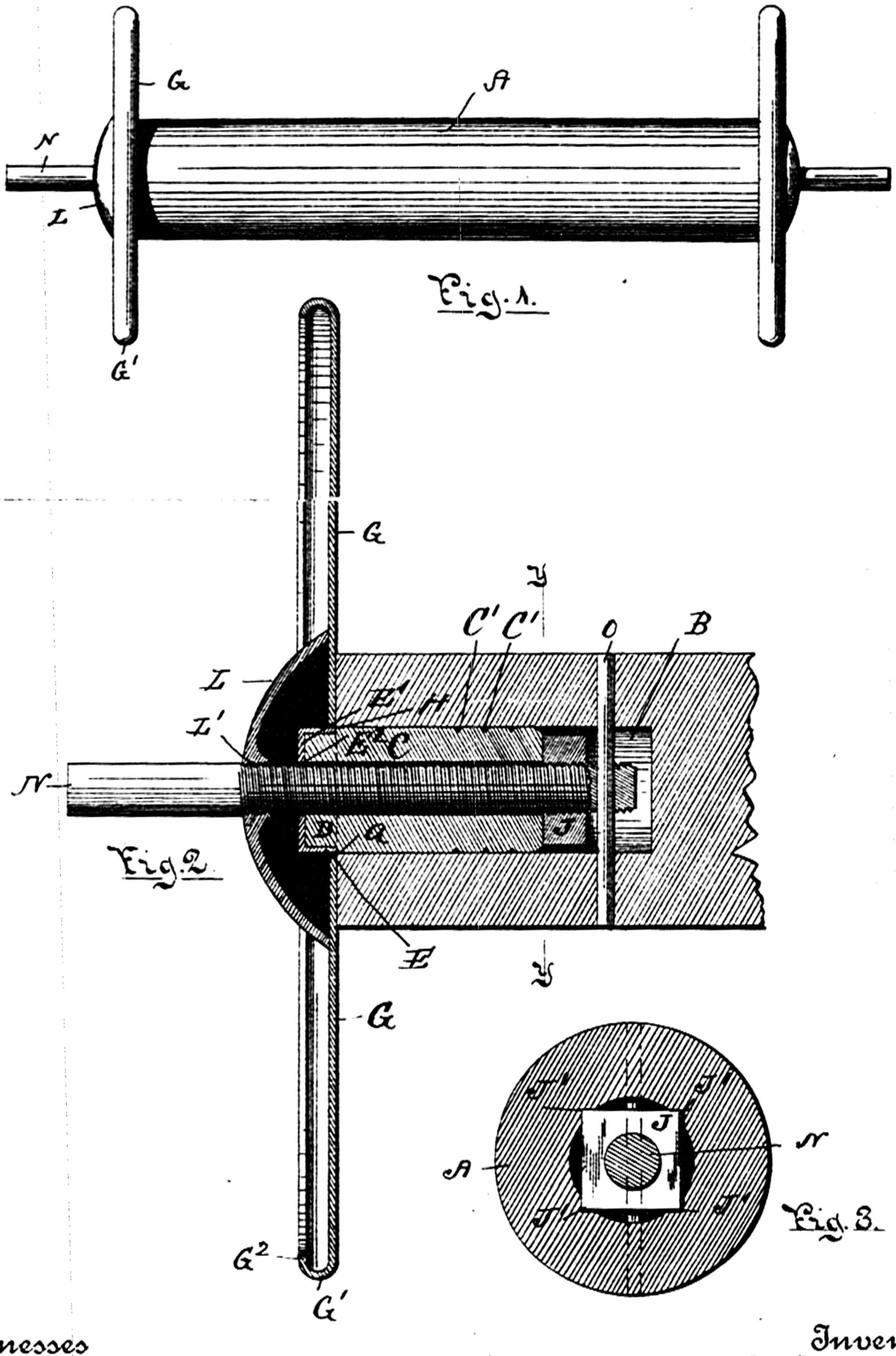


Fig. 1.

Fig. 2.

Fig. 3.

Witnesses
Walter S. Bowen
H. M. Fowler.

Inventor
Frank M. Marcy.

By his Attorney
Rufus B. Fowler.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK M. MARCY, OF WORCESTER, MASSACHUSETTS.

SPOOL.

SPECIFICATION forming part of Letters Patent No. 455,224, dated June 30, 1891.

Application filed September 20, 1890. Serial No. 365,595. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. MARCY, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Spools, of which the following is a specification, reference being had to the accompanying drawings, representing a spool embodying my invention, and in which—

Figure 1 is a view of the spool. Fig. 2 is a longitudinal central sectional view of one end of the spool; and Fig. 3 is a transverse sectional view on line Y Y, Fig. 2.

Similar letters refer to similar parts in the different figures.

My invention relates particularly to that class of spools which are designed for mill use; and it relates especially to the head of the spool and to its attachment to the barrel.

Referring to the drawings, A denotes the barrel, usually made of wood and bored at each end, forming a concentric chamber B, extending a short distance into the barrel. Within this chamber a wooden plug C is fitted, provided with a series of annular grooves C′. The outer end of this plug extends beyond the end of the barrel B at D, and is made slightly smaller in diameter to receive a metallic ferrule E, the end of the ferrule E abutting against the shoulder *a* in the plug C, and the outer end of the ferrule is closed at E′ with a hole E^2, concentric with the ferrule and of the proper size to receive the spindle N, forming the gudgeon to the spool.

The head G of the spool is made of an elastic metal, like spring-steel, and consists of a circular disk with a concentric hole at H fitting the periphery of the metallic ferrule E and resting against the end of the barrel A. The outer edge of the head G is turned over, forming a flange G′, which is curved in substantially semicircular form in its cross-section, as represented in Fig. 2, the edge G^2 of the curved flange being brought into substantially a plane parallel with that of the disk of sheet metal forming the head itself. This gives a round or semicircular edge to the edge of the head, and by turning the edge at G^2 into a plane parallel with the head itself the edge of the head is stiffened to resist any blows upon the edge of the head caused by dropping the spools upon the floor or otherwise. The head of the spool is held in place upon the end of the barrel by means of a nut J, which is driven into the chamber B before the insertion of the wooden plug C, the corners of the nut entering the wall of the chamber, as represented at J′ J′ in Fig. 3, to prevent the nut from turning in the chamber B. The plug C has a concentric hole coincident with the screw-threaded hole in the nut J, and also with the hole E^2 in the ferrule E, and a concave washer L is placed upon the head G, with its edge resting against the head. The concave washer L has a screw-threaded hole L′ in the center, and through the screw-threaded hole I place a screw-threaded spindle N, the end of the spindle passing through the nut J. The outer end of the spindle N is left plain, and the washer L is screwed against the plain section of the spindle, so that the washer L cannot be loosened by unscrewing it upon the spindle N. The spindle N is screwed into the nut J, bringing the nut J firmly against the inner end of the plug C and drawing the edge of the concave washer firmly upon the head G. The spindle N is then held from turning by means of a pin O driven through a hole in the barrel and the end of the spindle N, as represented in Fig. 2. The plug C is covered with a coating of glue or adhesive material previous to its being driven into the chamber B, and the grooves C′ serve to retain the glue that would be scraped from the surface of the plug by the operation of driving the plug into the chamber. The shoulder *a* should be flush with the end of the barrel or brought slightly within the barrel, in order to secure a bearing of the inner edge of the head G upon the metallic ferrule E, so that the edge of the head will not abrade the wood of the plug C, and the hole E in the ferrule is made to closely fit the spindle N and hold the spindle from contact with the interior of the plug, as it is similarly held at its inner end by the nut J. An advantange is also gained in employing a spindle N which is screw-threaded throughout nearly its entire length and employing

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with the screw-threaded spindle a screw-threaded washer L, as the nut J and washer L act as check-nuts one for the other.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the barrel of a spool having a concentric chamber at its end, of a nut held in said chamber, a head resting against the end of the barrel, a screw-threaded concave washer bearing against the outer surface of the head, and a screw-threaded spindle passing through said washer and entering said nut, substantially as described.

2. The combination, with the barrel of a spool having a concentric chamber at its end, of a nut held in said chamber, a hollow plug placed in said chamber by which said nut is retained in position, the end of said plug projecting beyond the end of said barrel, a metallic ring or ferrule inclosing the projecting end of said plug, a head held concentrically on the projecting end of said plug, a screw-threaded washer bearing against the outer surface of the head, and a screw-threaded spindle passing through said washer and entering said nut, substantially as described.

3. The combination, with a spool having a concentric chamber at its end, of a nut held in said chamber, a hollow block placed in said chamber, whereby the nut is retained in its position, said plug having its end projecting beyond the barrel of the spool, a metallic ring or washer inclosing said projecting end of the plug, a metallic head placed concentrically upon the projecting end of said plug and having a flanged edge turned over so as to bring the edge of the flange parallel with the plane of the head, a washer resting upon the outer surface of said head, and a bolt passing through said washer and said hollow plug and entering the nut held in the concentric chamber of the barrel, substantially as described.

4. The combination, with the barrel of a spool having a concentric chamber, of a nut held in said chamber, a hollow plug placed in said chamber, whereby said nut is held in position, said plug having its end projecting beyond the end of the barrel, a metallic head placed concentrically upon the projecting end of said plug and having a flanged edge, a metallic ring or ferrule interposed between the edge of said head and the projecting end of said plug, a washer resting against the outer surface of said head, a screw-threaded spindle passing through said washer and said hollow plug and entering the nut held in the concentric chamber of the barrel, and a retaining-pin passing through said barrel and said screw-threaded spindle, whereby it is held from rotation, substantially as described.

5. The combination, with the barrel of a spool having a concentric chamber at its end, of a nut held in said chamber, with its corners engaging the walls of said chamber, whereby said nut is held from rotating, a hollow plug placed in said chamber, by which said nut is held in position, said plug having its end projecting beyond the end of said barrel, a metallic head held concentrically upon the projecting end of said plug, a washer resting against the outside of said head, and a screw-threaded spindle passing through said washer and said hollow plug and entering the nut held in said concentric chamber, whereby said washer is drawn against said head, substantially as described.

6. The combination, with the barrel of a spool having a concentric chamber at its end and a nut held in said chamber, of a hollow plug held in said chamber and projecting beyond the end of said barrel, a head resting against the end of said barrel and held concentrically upon the projecting end of said plug, a concave washer extending over and covering the projecting end of said plug, with its edge resting upon the outer side of said head, and a screw-threaded spindle passing through said hollow plug and entering the nut held in said concentric chamber and engaging said concave washer, whereby it is drawn firmly against the head, substantially as described.

Signed this 18th day of September, 1890.

FRANK M. MARCY.

Witnesses:
M. D. MARCY,
RUFUS B. FOWLER.

April 15, 1924. 1,490,864

H. O. TAFT

JACK SPOOL AND FASTENER THEREFOR

Filed May 18, 1923

Fig. 1.

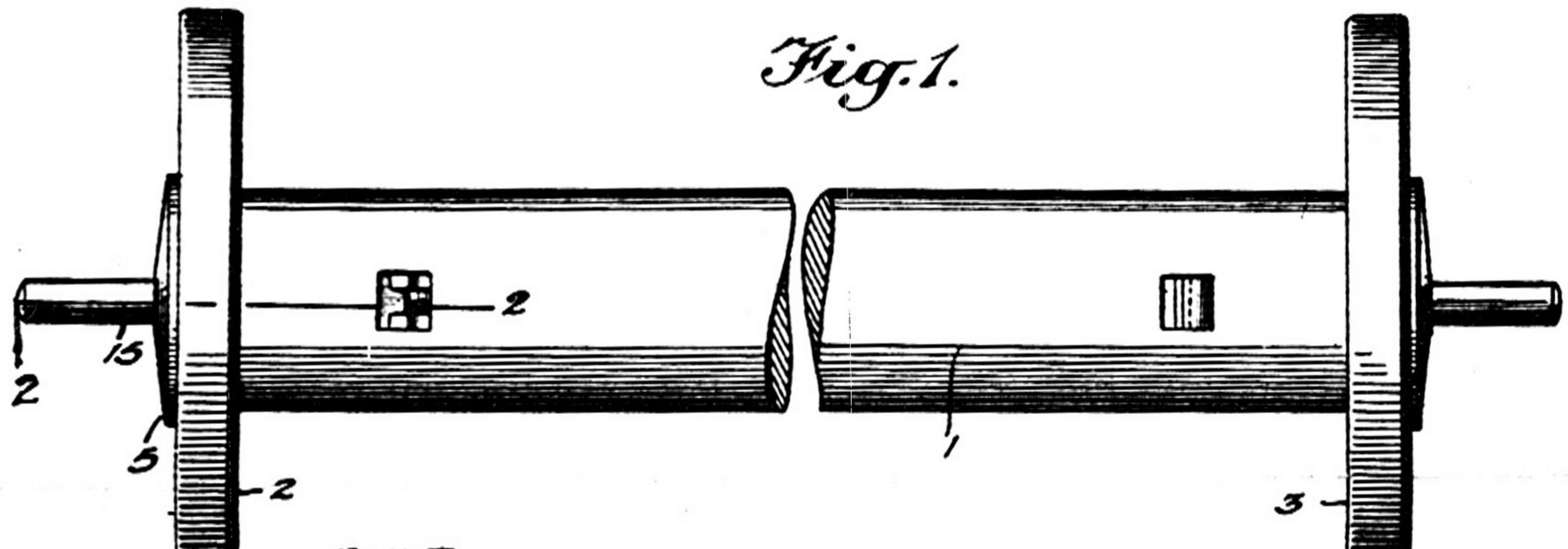


Fig. 2.

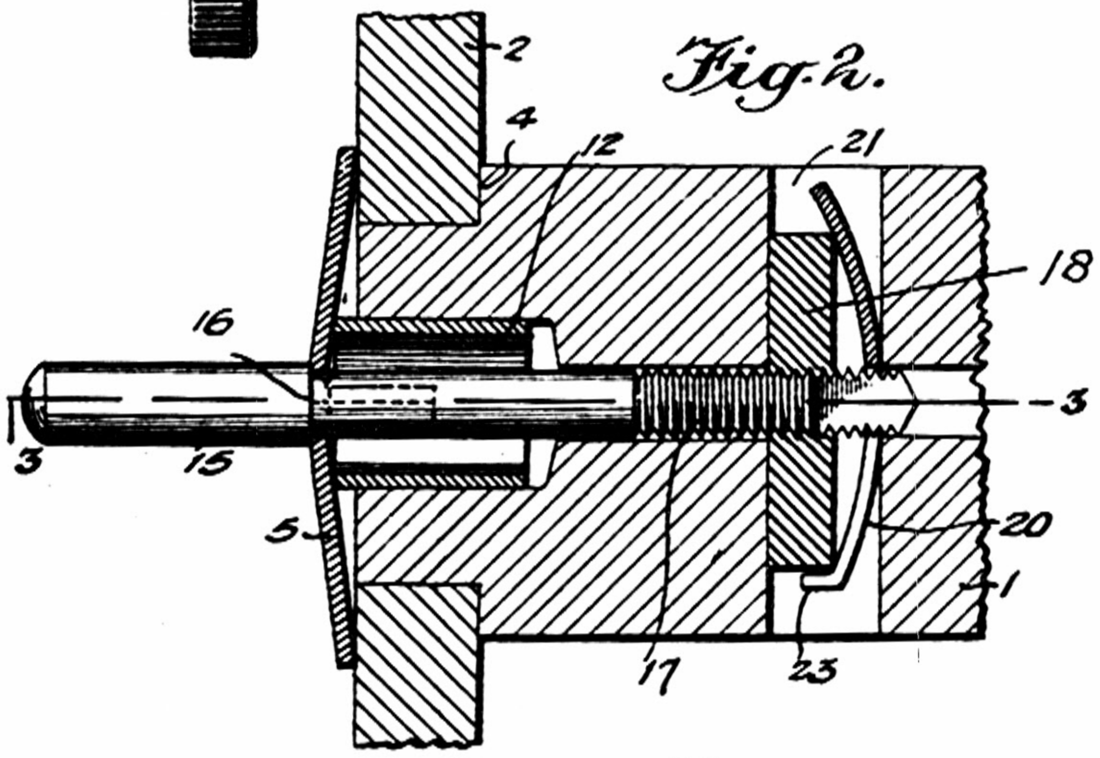
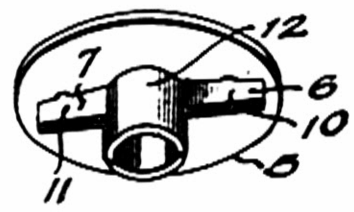


Fig. 4.



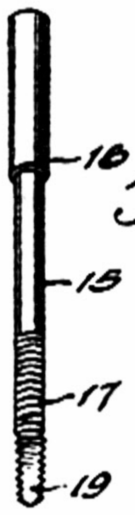


Fig. 5.

Fig. 3.

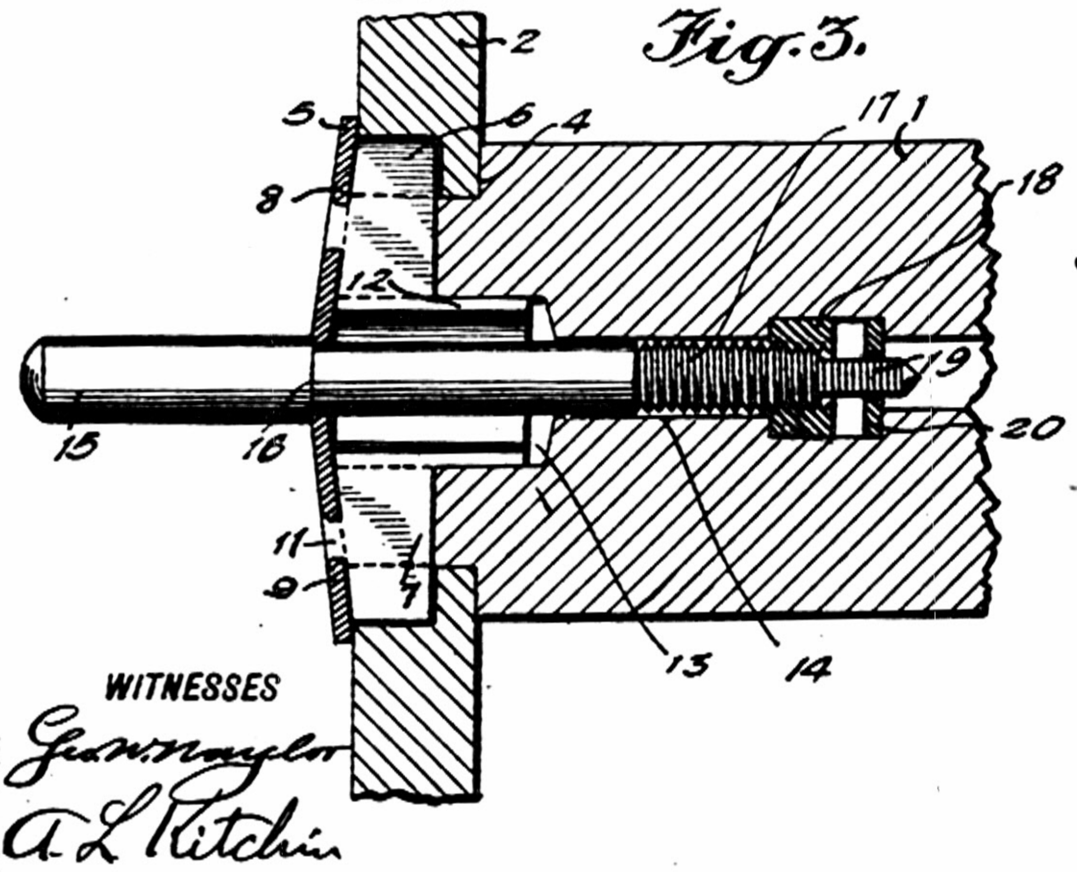


Fig. 6.

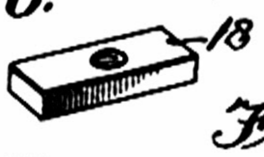
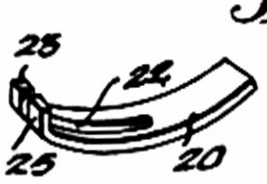


Fig. 7.



WITNESSES

Geo. W. Naylor

A. L. Ritchie

INVENTOR

HERBERT O. TAFT

BY Munn & Co.

ATTORNEYS

Patented Apr. 15, 1924. **1,490,864**

UNITED STATES PATENT OFFICE.

HERBERT OTHRO TAFT, OF BURLINGTON, VERMONT.

JACK SPOOL AND FASTENER THEREFOR.

Application filed May 18, 1923. Serial No. 639,838.

To all whom it may concern:

Be it known that I, Herbert O. Taft, a citizen of the United States, and a resident of Burlington, in the county of Chittenden and State of Vermont, have invented a new and Improved Jack Spool and Fastener Therefor, of which the following is a full, clear, and exact description.

This invention relates to jack spools and fasteners therefor, and has for an object to provide an improved construction which may be easily applied, and which will not become loose during the operation of the spool.

Another object of the invention is to provide a fastener for the gudgeon of the jack spool, which may be easily applied and locked in place, the construction being such as to cause the locking means to also lock the head of the spool against removal.

In carrying out the objects of the invention a body for the spool is provided of any suitable kind provided with a bore which accommodates a gudgeon and locking means for locking the same in place. In order that the gudgeon may not work loose, a bearing plate is provided for supporting the same near the outer end and this plate in turn is connected with the cylinder through a plurality of webs merging into a supporting sleeve, all of which are locked in place by the same locking means which holds the gudgeon in its locked position. In this way the gudgeon is properly supported in the spool and is locked against independent movement.

In the accompanying drawing—

Figure 1 is a side view of a jack spool with a fastener embodying the invention applied thereto.

Fig. 2 is a sectional view through Figure 1 approximately on the line 2—2.

Fig. 3 is a sectional view through Figure 2 on the line 3—3.

Fig. 4 is a perspective view on a reduced scale of a bearing plate and sleeve embodying certain features of the invention.

Fig. 5 is a perspective view on a reduced scale of the gudgeon shown in Fig. 2.

Fig. 6 is a perspective view on a reduced scale of the nut shown in Fig. 2.

Fig. 7 is a perspective view on a reduced scale of the spring locking member shown in Fig. 2.

Referring to the accompanying drawings by numeral, 1 indicates the body or cylinder of the spool, and 2 and 3 the heads. Both ends of the spool are constructed identically so that the description of one will apply to both. As shown in Figures 2 and 3, the cylinder 1 is provided with an angular notch 4 for receiving the head 2, which head may be fastened in place by glue if desired, but which is locked firmly in place by the bearing plate 5 and the webs 6 and 7. The bearing plate 5 is a very thin disk somewhat cone-shaped and provided with apertures 8 and 9 for receiving the rivets 10 and 11, which rivets are preferably integral projections from the webs 6 and 7. These webs are preferably made in two sections, as shown in Figure 4, and each section merges into half of the supporting sleeve 12. When these sections are both together, as shown in Figure 4, and when the rivets from the various sections are projected through the apertures 8 and 9 and are then upset, the parts are firmly secured together and the plate 5 is also firmly secured to the webs 6 and 7. Suitable nostrils are provided in the end of the cylinder 1 for receiving the webs 6 and 7 and a suitable bore 13 is provided for cylinder 1, while a similar bore 14 is provided for the inner part of the gudgeon 15. This gudgeon is provided with a shoulder 16 bearing against the plate 5 with sectional threads 17 for receiving the nut 18 and a flattened section 19 for receiving the spring lock 20. The nut 18 may be of any desired shape provided it is supplied with a threaded aperture whereby the section 17 may be screwed therein. However, the nut 18 is preferably somewhat elongated to present a better bearing surface than the transverse passageway 21. After the plate 5, webs 6 and 7 and sleeve 12 have been assembled and placed in proper position with respect to the cylinder 1, the gudgeon 15 is inserted and is screwed into the nut 18 until the parts are tight. The spring locking member 20 is then forced into position, as shown in Figure 2, and the spool is ready for use. The spring locking member 20 is a resilient plate formed preferably arc-shaped and provided with a slot 22 accommodating the flat portion 19 of the gudgeon. Turned-down end sections 23 and 24 fit over the end of the nut 18 and thereby prevent the spring from being accidentally removed.

What I claim is:

1. A jack spool comprising a body having

a longitudinal bore at one end, a gudgeon extending into said bore, said gudgeon having a threaded section at the edge extending into the bore and also a flattened section at the same edge, a nut fitting into said body adapted to be engaged by the threaded section of the gudgeon, and a spring member formed with an opening straddling said flattened portion of the gudgeon, said spring member being also formed with end portions overlapping the ends of said nut preventing independent rotation thereof.

2. A jack spool comprising a body having a longitudinal bore at one end, a bearing plate fitting against the end of the body, said bearing plate having an opening registering with said bore, a gudgeon forming a shoulder adapted to fit against said bearing plate and part of the gudgeon extends through said aperture and into said bore, said part being formed with a transverse passageway, a nut fitted in said transverse passageway, said gudgeon being formed with threaded sections coacting with said nut, whereby said shoulder is adapted to press said bearing plate firmly in place, said gudgeon being formed with a flat portion near said nut, and an arc-shaped locking spring having a bifurcated section straddling the flattened portion of the gudgeon, said spring being formed with a bent portion at one end fitting against the end of said nut to prevent independent rotary movement of the gudgeon.

3. In a jack spool a body, a gudgeon extending from said body, means for locking the gudgeon in said body, and a bearing structure for the gudgeon, said bearing structure comprising a disk having an aperture through which the gudgeon extends, and a pair of webs merging into a tubular supporting section and a plurality of rivet members extending through the disk for connecting the webs to the disk.

4. A jack spool of the character described comprising a gudgeon and a bearing structure therefor, said bearing structure comprising a disk having an aperture therein and a pair of bracing and supporting members for the disk, each of said bracing and supporting members comprising a pair of oppositely extending webs, a semi-tubular central portion, and a pair of rivets extending through the disk and upset at one end locking the disk to the webs.

5. A jack spool and fastener comprising a body, a disk having an aperture, said body having a bore arranged in line with said aperture, a gudgeon formed with a shoulder, said gudgeon extending through the aperture in said disk so that the shoulder will press against the disk and force the disk against said body, said gudgeon at the inner end being threaded and formed with a flat section, a nut fitted into the body for receiving the threaded end of the gudeon, and a locking member for preventing independent rotation of the gudgeon, said locking member comprising a substantially arc-shaped spring having a slot for receiving said flattened portion, said spring at one end being offset for engaging one end of said nut.

HERBERT OTHRO TAFT.

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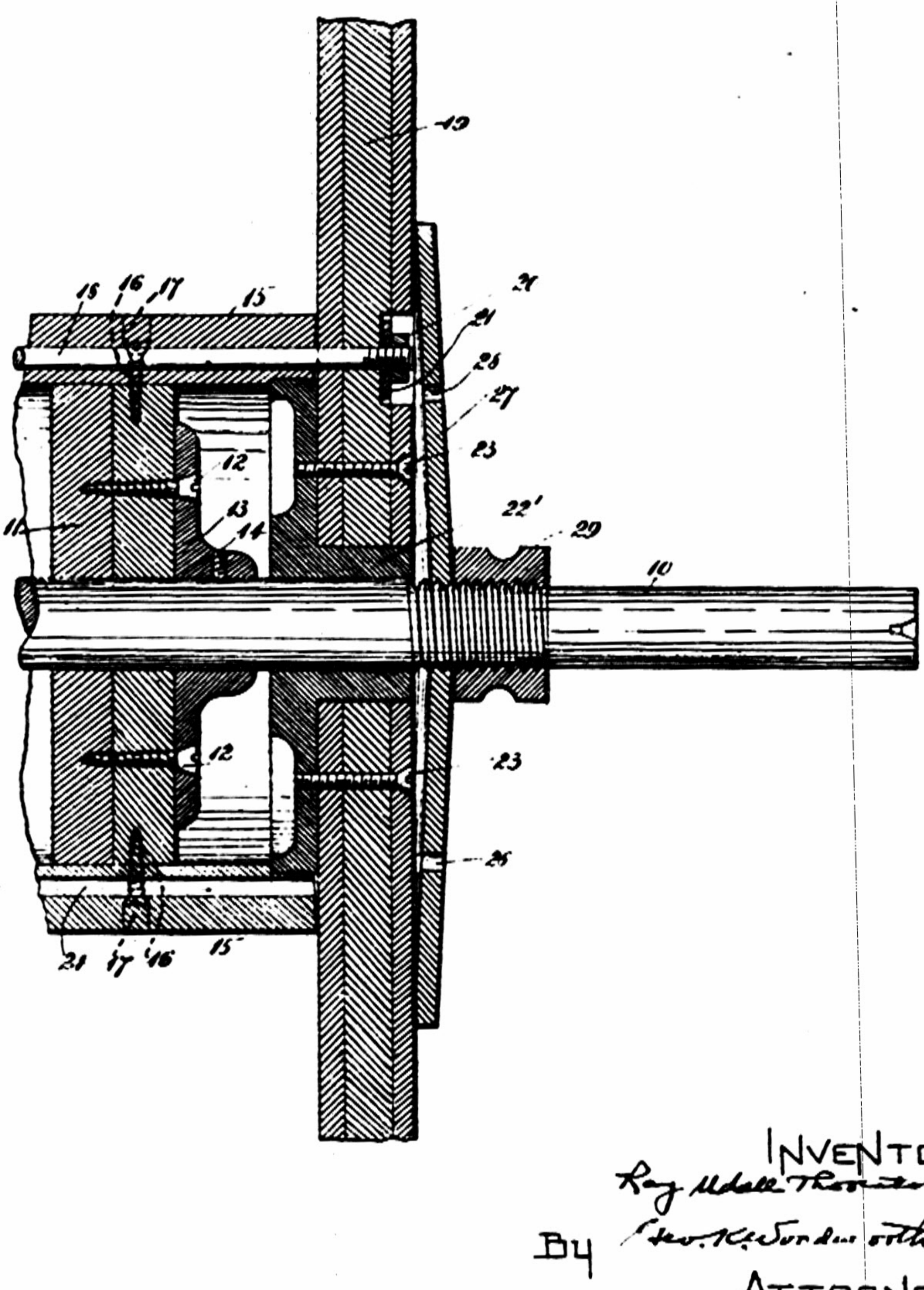
Fig. 3.



INVENTOR=
Ray Udall Thornton

By Geo. K. Woodworth
ATTORNEY=

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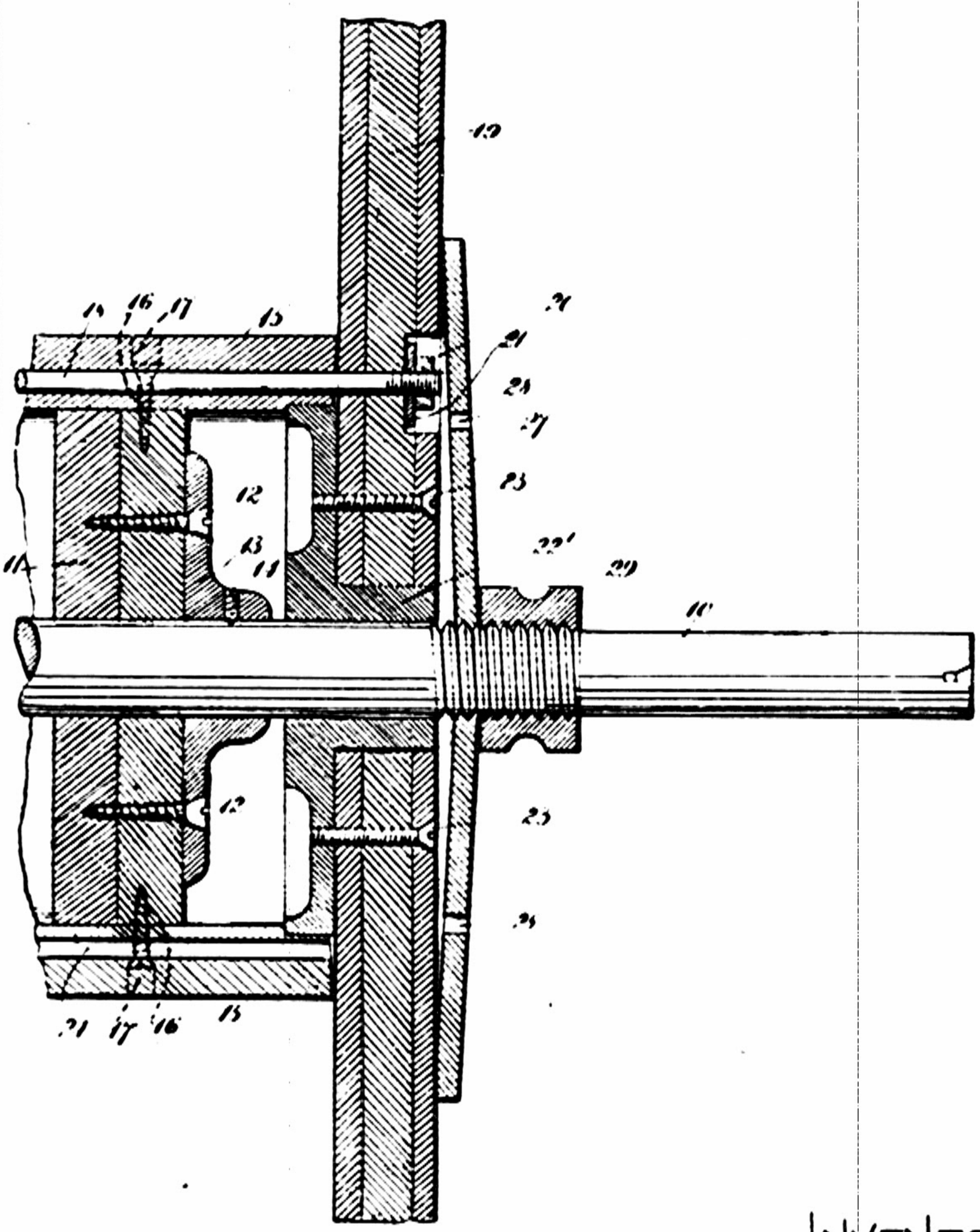
Fig. 3.



INVENTOR:
Roy Udall Thornton

By Geo. K. Woodworth
ATTORNEY:

156 In the United States Court of Appeals for the District of Columbia

In Equity No. 7009

Ray U. Thornton, *Plaintiff-Appellant*
v.
Conway P. Coe, Commissioner of Patents, *Defendant-Appellee*

Now comes the appellant in the above entitled cause, by William L. Edmonston, his attorney, and directs the Clerk to print the record in said cause as filed, except the following parts thereof, which the Clerk is directed to omit, namely:

1. Exhibit A—Patent No. 1,484,154—Peterson—Pages 119 to 125 inclusive;
2. Exhibit A—Patent No. 1,484,154—Peterson—Pages 130 to 134 inclusive;
3. Defendant's Exhibit 1—Patent No. 1,484,154—Peterson—Pages 140 to 143 inclusive;
4. Defendant's Exhibit 1—Examiner's Statement—Pages 149 to 151 inclusive;
5. Defendant's Exhibit 1—Decision of Board of Appeals —Pages 152 to 155 inclusive.

Respectfully,

WM. L. EDMONSTON

No objections

R. F. WHITEHEAD

157 Endorsement: No. 7009 Ray U. Thornton, Appellant vs. Conway P. Coe, Commissioner of Patents. Designation for printing. United States Court of Appeals for the District of Columbia Filed Jul 21 1937 Moncure Burke, Clerk.

Endorsed on cover: No. 7009 Ray U. Thornton, Appellant vs. Conway P. Coe, Commissioner of Patents. United States Court of Appeals for the District of Columbia Filed Jul 17 1937 Moncure Burke, Clerk.

FOR MR. JUSTICE EDGERTON

UNITED STATES CIRCUIT COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA.

APRIL TERM, 1937.

No. 7009.

RAY U. THORNTON,
Appellant,

v.

CONWAY P. COE,
Commissioner of Patents.

BRIEF FOR APPELLANT.

GEO. K. WOODWORTH,
WM. L. EDMONSTON,
Counsel for Appellant.

L. H. LANE, 221 High Street, Boston.

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ERRATA.

Index of Transcript p. 2, line 13, for "2" read *4*.
Transcript, p. 27, line 5, for "sheet" read *sleeve*.

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UNITED STATES CIRCUIT COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA.

APRIL TERM, 1937.

No. 7009.

RAY U. THORNTON, APPELLANT,

v.

CONWAY P. COE, COMMISSIONER OF PATENTS.

BRIEF FOR APPELLANT.

STATEMENT OF THE CASE.

This is an appeal from the Final Decree, entered June 3, 1937, of the District Court of the United States for the District of Columbia dismissing the bill of complaint in a suit under Section 4915 of the Revised Statutes praying that the Commissioner of Patents be authorized and enjoined to issue to plaintiff a patent on his application S. N. 622,059 for improvement in section or warper beams filed July 12, 1932.

The question involved is whether plaintiff is entitled to a patent on said application and the determination of this question raises various other questions including the following:

Whether the trial court correctly construed the disclosures of plaintiff's application and those of the prior patents set up in defendant's answer;

The propriety of building up an anticipation by combining the devices of two or more prior patents where one of them does not have an element that is the equivalent of an element in the other or others;

Whether an undescribed relation in a prior patent, which relation is quite unnecessary to the attainment of the result sought by the prior patentee, is a factor in the determination of the patentability of appellant's invention where such relation is essential; and

Whether the attainment of a radically new result that satisfies a long felt want, coupled with a large degree of commercial success, is not in itself decisive of the question of patentability.

These questions are raised by Assignment of Errors.

THE ERRORS RELIED UPON.

The errors relied upon are printed on pages 8–10 of the Transcript of Record and for the conveneince of the Court are regrouped as follows:

A.

The Court erred:

1. In finding that the concave discs of appellant's application S. N. 622,059 are slightly larger in diameter than the barrel or beam;

2. In failing to find in accordance with the evidence that the concave discs of appellant's application S. N. 622,059 are substantially larger in diameter than the barrel or beam;

B.

3. In finding that the Peterson patent No. 1,484,154 discloses a warp beam the heads of which may be effectively braced against the pressure of the yarn mass by a concave bracing disc of slightly smaller diameter than the head;

4. In failing to find in accordance with the evidence that the bracing disc 3 of said Peterson patent, the main disc 1 thereof, and the spacing sleeve 8, constitute, respectively, the compression member, the chord or tension member, and the strut of a truss construction, the said members being rigidly interconnected whereby said truss construction may have the strength of a solid cast iron head, and accordingly said bracing disc is not the equivalent of appellant's disc 27.

5. In not holding that said Peterson patent is entirely irrelevant

to the issue raised by the pleadings and teaches nothing that would assist one skilled in the art to produce the invention defined by claims 9 and 10 of appellant's application;

14. In failing to find in accordance with the evidence that if the concave bracing disc of the Peterson patent were made independent of and separable from the main disc thereof, the head of the Peterson warp beam would be rendered inoperative and ineffective for its intended purpose;

C.

6. In failing to find in accordance with the evidence that the washers and bearing plates of the Marcy patent No. 455,224 and the Taft patent No. 1,490,864, respectively, might be made larger in diameter than the barrels or cylindrical portions of the jack spools disclosed in said patents without altering the mode of operation of the respective devices or changing the results sought by the respective patentees;

7. In finding that the diameter of the Marcy concave washer is slightly greater than the diameter of the head;

8. In failing to rule in accordance with the law that the illustration of said washers and bearing plates of said Marcy and Taft patents, respectively, as slightly larger in diameter than the barrel or cylindrical portion of said jack spools is a mere accidental showing;

10. In failing to find in accordance with the evidence that the gudgeons projecting from the ends of the jack spools of the Marcy and Taft patents are not the equivalent of the shaft extending through appellant's warp beam;

11. In failing to find in accordance with the evidence that the design and construction of the jack spools disclosed in the Marcy and Taft patents do not present the problems confronting the designer of a warp beam or afford any information that would be useful in the construction of a warp beam;

12. In failing to find in accordance with the evidence that appellant's claims 9 and 10 are differentiated as a matter of terms from

the Marcy and Taft patents in that the latter do not disclose the combinations claimed in said claims;

D.

9. In combining the Peterson patent for a warp beam with the Marcy and Taft patents for jack spools as the basis of a ruling that claims 9 and 10 of appellant's application define no invention;

13. In failing to rule in accordance with the evidence that the said Peterson patent discloses no element that is the equivalent of any element in either the Marcy or Taft patent and that might be substituted for anything in either of the latter;

15. In holding in paragraph 1 of the Conclusions of Law that claims 9 and 10 of plaintiff's application S. N. 622,059 define no invention over the prior art, as illustrated in the three patents to Marcy, Taft and Peterson;

18. In not ruling that claims 9 and 10 of plaintiff's said application define patentable invention over the prior art, as illustrated in the three patents to Marcy, Taft and Peterson;

F.

21. In failing to rule that appellant's invention, as defined by his claims 9 and 10, was not an obvious thing in view of the prompt and sustained demand for warp beams embodying the same from the date of their first appearance on the market.

22. In ruling that appellant's invention, as defined by his claims 9 and 10, is not patentable notwithstanding that appellant was the first to provide the textile industry with a warp beam suitable for use with yarns of all weights and types irrespective of weather conditions.

G.

16. In ruling that plaintiff is not entitled to a patent on his said application containing claims 9 and 10;

17. In dismissing the bill of complaint;

19. In not ruling that plaintiff is entitled to a patent on his said application containing said claims 9 and 10;

20. In not granting the prayers of the bill of complaint.

ARGUMENT.

PLAINTIFF'S INVENTION.

A section beam or warper beam is a gigantic spool having a barrel more than four feet in length and about a foot in diameter, to the respective ends of which are secured heads about three feet in diameter, the whole weighing approximately 175 pounds and being designed to carry from 500 to 700 pounds of yarn.

The invention is an improvement on patent No. 1,239,744, issued September 11, 1917 to plaintiff's father. This patent discloses a radical innovation in the art, namely, a multi-ply wooden head on which the business of plaintiff's company was built and which superseded practically all other types.

The patent is referred to chiefly to show the Court a section or warper beam in its entirety.

In the spinning mill, *after* the spinning operation has been wholly completed, the warper beam is filled with yarn and transported to the weaving mill where it is mounted in bearings in a machine and the yarn drawn off to a smaller beam ("loom beam") which is then mounted in a loom and the yarn carried thereon woven into cloth.

During the filling process the warper beam rotates at very high speed, stated in the specification to be about one hundred miles an hour (T. R. 32), which means about 1200 revolutions per minute, or 20 per second. Because of this high speed, it is necessary to reduce the weight of the beam to a minimum.

The art long prior to plaintiff's entry in the field had found that the beam heads, unless made excessively thick and heavy, frequently spread when the beam was filled with yarn, that is to say, the heads were forced outwardly and away from each other due to the great pressure exerted against them by the heavy load of yarn.

The object of appellant's invention is to prevent such spreading by providing stiffeners in the form of a pair of convex discs of resilient material such as hot rolled steel each of which may have threaded engagement with the shaft and each disposed with the outer periphery of its concave face in engagement with the outer face of one of the heads so that by screwing the discs along the shaft they will be forced against the respective heads and thereby counteract the force exerted against the latter by the heavy load of yarn (T. R. 32, 34).

The pressure exerted against the heads by the yarn depends on the type of yarn used, the state of the weather, and the density of the winding of the yarn (T. R. 17).

The yarn varies in thickness from fine thread used for weaving sheets (Exh. 5) to the heavy yarn used for making automobile tire fabric, known as "5 Ply No. 23" yarn of which three strands usually are twisted together (Exh. 10).

When the air contains more than the usual amount of moisture, yarn of whatever type swells and greatly increases the outward pressure to which the beam heads are subjected. The heavier the yarn the greater the absorption of moisture, and in the case of "5 Ply No. 23" yarn, the water absorption is unbelievably large and the spreading of the heads due to the resulting increase in pressure is correspondingly great (T. R. 18).

Even in the absence of humidity, heavy yarn will force the heads apart, and although ordinarily light yarn, such as used in the sheeting mills, will not have this effect, it is often desirable to wind such yarn quite densely and in such case the pressure of the yarn mass on the heads will spread the latter.

Even in the case of light yarn wound on the beam with the usual density, such that there is no resulting spreading, the expansion of such yarn due to exposure for a few hours to a humid atmosphere will cause the heads to spread.

An examination of the Thornton Patent No. 1,239,744 will make it clear to the Court how the force applied by the yarn to the inner faces of the heads will spread them, for the heads are held against the barrel only by two nuts 20, 20 threaded to the central shaft 12 (T. R. 91, Exh. 6, T. R. 96).

The Court will note also that in said patent, the barrel is secured to the shaft by several small set screws 13 which clamp thereto the wooden discs 13 disposed within the barrel and secured to the inner periphery thereof. The momentum developed by a rapidly rotating heavily loaded beam is enormous, and therefore a sudden stoppage, or even a change in speed, of the beam was disastrous and resulted invariably in relative movement between the heads and the barrel or between the entire beam and the shaft (T. R. 32).

Plaintiff, improving upon his father's patent, devised a means for attaching the head to the barrel, consisting of a series of rods 18 passing through grooves in the beam and extending through the heads, and the nuts 20 threaded to the ends of said rods, whereby relative movement between these two elements is eliminated and the spreading tendency of the heads of a heavily loaded beam is slightly *reduced* in the case of light yarn or thread, although not to any *practicable* extent (T. R. 19). This is the subject matter of allowed claims 1, 2 and 3.

While the arrangement for securing the barrel and heads together was effective in preventing relative movement between the same, it did not suffice to *prevent* spreading (T. R. 19, Exh. 7, T. R. 97).

The anti-spreading or stiffener discs are shown at 27 in Fig. 3 of the drawings accompanying plaintiff's application (T. R. 39).

A model of a portion of a warper beam made in accordance with plaintiff's application was put in as Exh. 8 (T. R. 18). The Court will observe from this exhibit that the discs are heavy plates of hot rolled steel provided with a series of holes (shown in the application drawings at 28) whereby they can be screwed along the shaft by a spanner and forced against the heads at any desired pressure. Having secured the pressure which experience has taught the spinner or the warper beam manufacturer is required for the type of yarn to be used the lock nuts (shown in the application drawings at 29) are screwed against the discs to hold the latter in position.

The specification refers in the third paragraph of page 3 (T. R. 34) to a "spanner wrench" for turning the disc against the head. This is a wrench of peculiar construction provided with pins and having a handle four feet long (T. R. 21) whereby there can be secured sufficient leverage to turn the discs up against the heads with sufficient force, if necessary, to convert the concave disc three-eighths of an inch in thickness into a flat plate.

The invention is defined by claims 9 and 10 (T. R. 4).

It will be noted that there is a substantial difference between these claims in that claim 9 is limited to a pair of discs "in threaded engagement" with the shaft while claim 10 is not so limited.

It is not essential that the discs be threaded to the shaft as illustrated in Fig. 3 of the application drawings and set out in claim 9.

While the best result is obtained by threading the discs to the shaft it will be obvious that the desired pressure could be exerted on the heads if the central holes through the discs were smooth and they were forced against the outer faces of the heads by the nuts 29 (paper No. 8, file-wrapper and contents filed June 5, 1933 *re* claim 8 entered June 1, 1933) (T. R. 51 and 54).

Claim 5, the prototype of claim 9, as amended Jan. 20, 1933 and *allowed* by the Office action of April 24, 1933 over prior patents not now before the Court and as *again* allowed by the Office action of August 21, 1933 in which the Taft patent now before the Court was cited against other claims, reads as follows:

> 5. A section beam comprising a shaft, a barrel and a pair of heads mounted on said shaft, a pair of discs each engaging the outer face of said heads and being in threaded engagement with said shaft, each said disc being convex outwardly with respect to the head adjacent thereto and each being larger in diameter than said barrel, and means for locking each said disc against axial movement with respect to said shaft.

Claim 8, the prototype of claim 10, was submitted June 1, 1933 after the allowance of claim 5, because the limitation of the heads *in threaded engagement* with the shaft was unnecessary.

By the Office action of Aug. 21, 1933 said claim 8 was rejected on the Taft patent then for the first time cited, but claim 5, as above stated, *stood allowed* (T. R. 55).

It was not until Dec. 6, 1933 that the Examiner discovered the

Peterson and Marcy patents, whereupon said claims 5 and 8 were both rejected on the Peterson patent *taken in connection with the other two* (T. R. 58).

Thereupon the applicant by his amendment of Jan. 11, 1934 (T. R. 59) rewrote said claims 5 and 8, respectively, as claims 9 and 10, being the claims attached as Exh. A to the bill of complaint T. R. 4).

The only substantial difference between claim 5 amended as above and appealed claim 9, and between claim 8 as amended Sept. 1, 1933 and appealed claim 10, is the limitation in the appealed claims that the discs are "independent of and separable from" the heads, such limitation having been incorporated in the claims to differentiate from the Peterson patent.

It would seem, therefore, clear that the Patent Office relied chiefly on the Peterson patent and the present argument will be directed chiefly thereto.

It is essential that the discs 37 be *substantially* larger in diameter than the barrel 15 which with the two heads 19 form the spool or warper beam.

As originally filed, these discs or stiffeners were characterized as "greater" in diameter than the barrel (T. R. 32, last line, 3rd paragraph) and in the specific description of Fig. 3 as "slightly larger in diameter than the barrel" (T. R. 34, paragraph 3); but in the sentence immediately following, appellant gave the following example:

> ". . . if the barrel is 10″ in diameter, the stiffener disc may be from 13″ to 15″ in diameter."

Thus it will be seen that the recommended diameter of the discs is from 30 percent to 50 percent greater than that of the barrel. The word "slightly" in the third paragraph of page 34 of the Transcript obviously is a typographical error that was not noticed until the preparation of the brief before the Board of Appeals wherein it was pointed out that in the 10th line from the foot of page 3 the word "slightly" should read—*substantially*—and motion was made for the necessary correction (T. R. 68).

The Office permitted plaintiff to amend the last line of paragraph 3, page 1, of his specification (T. R. 32) but the learned Court in his findings of fact made much of this inadvertent error in phraseology (T. R. 6, 7). As the figures given on page 3 of the specification, *viz.*, a disc from 13″ to 15″ in diameter for a 10″ barrel are controlling manifestly it is proper to designate such difference in size as *substantial* rather than "slight",—in fact, to designate it as "slight" would be quite inaccurate.

Each of the appealed claims specifies that the discs are *substantially* larger in diameter than the barrel and the meaning of the words "substantially larger" ought, in accordance with well settled principles, be determined by reference to the specification, especially the 3rd paragraph on page 3 thereof (T. R. 34).

> *Schick Dry Shaver Inc.* v. *Dictograph Products Co.*, 89 F. (2) 643, 646 [3] C. C. A. 2.

Obviously if the discs were not "substantially" larger than the barrel the great force required to press the outer or radial portions of the thick laminated-wood heads inwardly to counteract the oppositely directed force exerted thereon by the yarn mass could not be obtained.

Before the warp beams are wound, the heads are flexed inwardly, sometimes by the manufacturer and sometimes by the spinner, and if by the manufacturer the amount of such flexing is based on data given the manufacturer by the spinner concerning the type of yarn to be used.

> "Practice has taught the manufacturer how to adjust the steel discs knowing the type of yarn that is to be wound on the beam" (T. R. 31).

The heads having been flexed by suitably adjusting the steel discs, yarn is wound on the barrel at the spinning mill and the counter-forces exerted by the yarn mass on the inner faces of the heads are such as to restore the latter to their normal positions at right angles to the barrel, as shown in the application drawings.

When the warper beam is to be loaded with heavy yarn such as tire yarn (Exh. 10 T. R. 18) the flexing of the heads or the dishing of the same inwardly is greater than when the beam is filled with finer yarn such as sheeting yarn. In fact, plaintiff testified that when the beam is filled with very heavy yarn that is to be subjected to a humid atmosphere the inward dishing of the heads is "a little better than 1/16th of an inch" (T. R. 21).

The spreading of the heads of the warper beam results in "selvage breaks" when the yarn is wound off the warper beam and on the loom beams which are much smaller than the warper beam and which when filled are placed in the loom and the yarn unwound from them during the process of weaving (T. R. 17). The yarn is wound from the warper beams to the loom beams by securing the ends to the latter and rotating the same by mechanism. No mechanical force is applied to rotate the warper beam and the rotation thereof is effected solely by the pull of the yarn carried by it. (T. R. 19).

We find from page 16 of the Transcript that from 500 to 800 threads are wound simultaneously on the warper beam from the "spools" or "cones" mounted in the "creel" and in such case, of course, the warper beam is rotated mechanically to wind the 500 or more threads off the 500 or more spool or cones onto the warper beam (T. R. 16); but when the yarn is drawn off the warper beam and wound on the loom beam no mechanism is employed to rotate the warper beam, mechanism is used to rotate the loom beam, the threads are attached to the loom beam, and by the rotation of the latter are drawn from the warper beam and wound on the loom beam.

SPREADING.

There are two results of spreading, one serious and the other simply annoying. The annoying result may be explained by the two diagrams marked Exhs. 6 and 7 (T. R. 96, 97) and is substantially as follows:

A very small V-shaped space is formed between the ends of the barrel and the heads into which a small portion of the yarn at the ends of the barrel known as "selvage threads", because in weaving they form the edge portions of the cloth known as the "selvage", are caught, so that a few selvage threads, the last few convolutions of the threads about the barrel, near the ends thereof are lost.

Heretofore no means were known for rectifying this defect.

The other and far more serious result of spreading is as follows:

> "When the heads spread the selvage threads settle or pack themselves down and as no mechanical device is used for unwinding them, and they are pulled off the beams by their own tension, *the edge threads take the whole pull.* The reason they take the whole pull is that the diameter of the yarn mass at the ends where the yarn has settled due to spreading is smaller than the yarn mass at the central portions of the beam. Because the end threads cannot stand the strain to which they are subjected by taking the whole pull, they break." (T. R. 19.)

To make this matter perfectly clear to the Court three sheets of simple diagrams and the following description of them are submitted.

Fig. 1.

A cylinder mounted for rotation on the shaft X-X has a section A three feet in diameter and a section B one foot in diameter.

A cylinder C mounted for rotation on the shaft Y-Y has a uniform diameter of three feet.

The circumference of A and C is 9.42 feet.

The circumference of B is 3.14 feet.

Draw a length of thread 1 off A and make it fast to C.

Then give C one complete revolution, at the same time grasping the end of thread 2 and holding the length that unwinds from B horizontally, but exerting no pull on it:

> 9.42 feet of thread 1 will be unwound from A and wound on C.
>
> 3.14 feet of thread 2 will unwind from B, the demonstrator holding it horizontally.

Mark the point where thread 1 becomes tangential to the surface of A with the letter *a*.

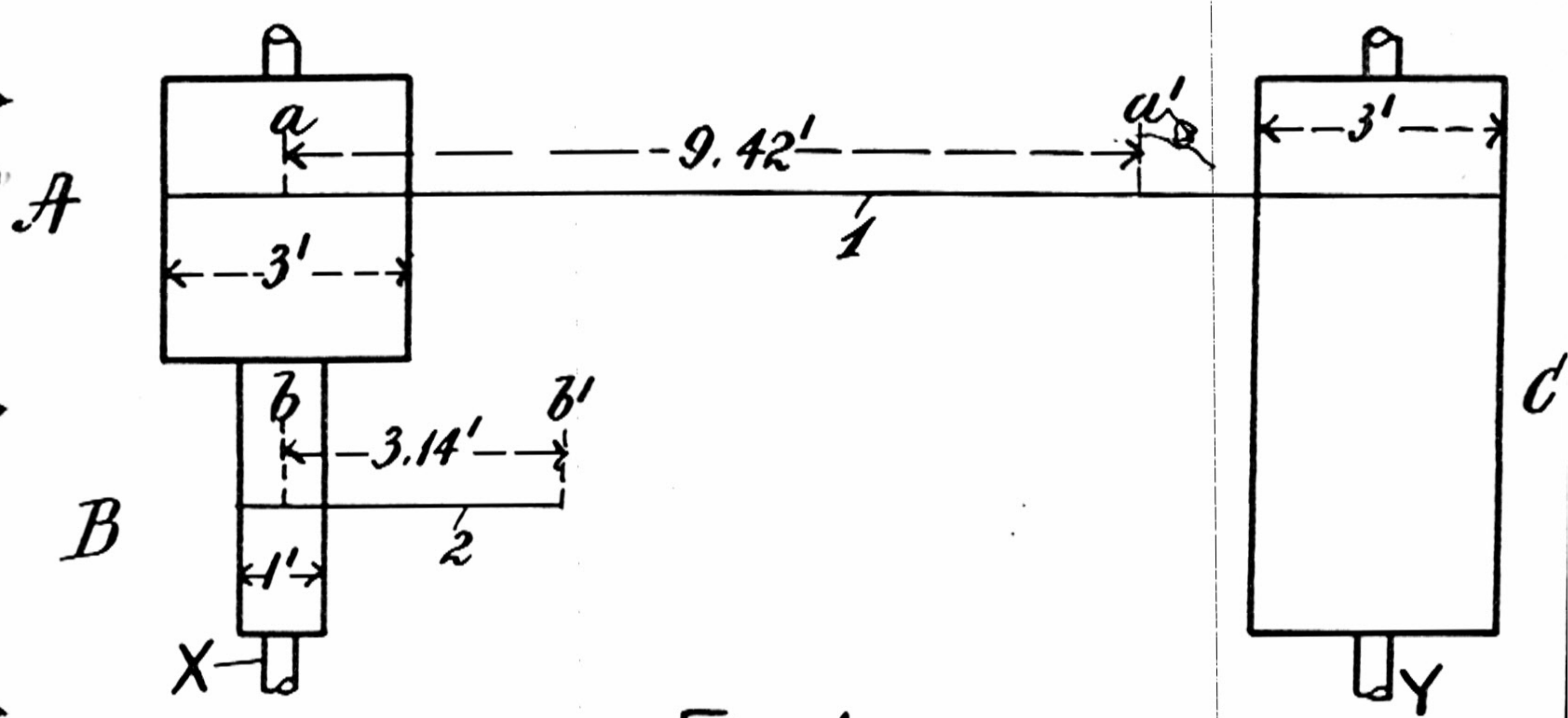


Fig. 1.

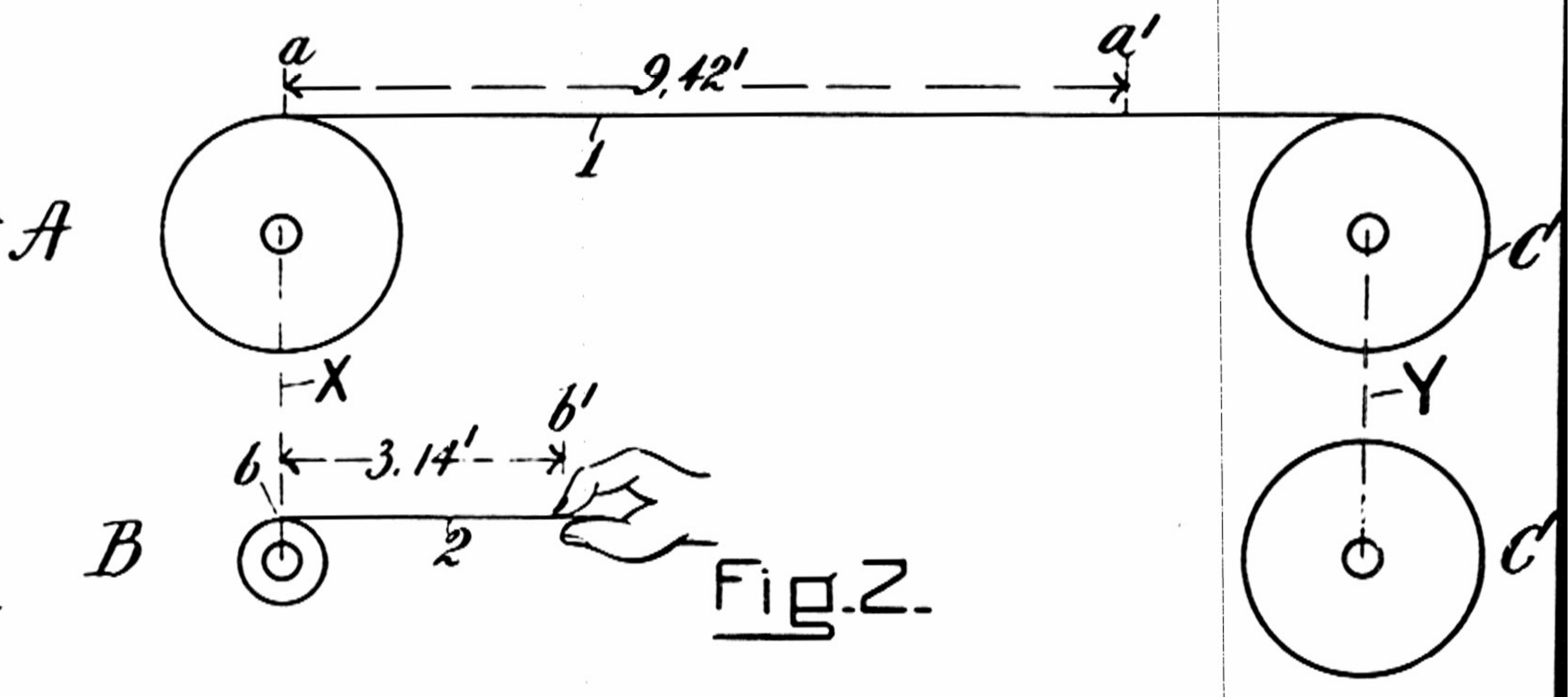


Fig. 2.

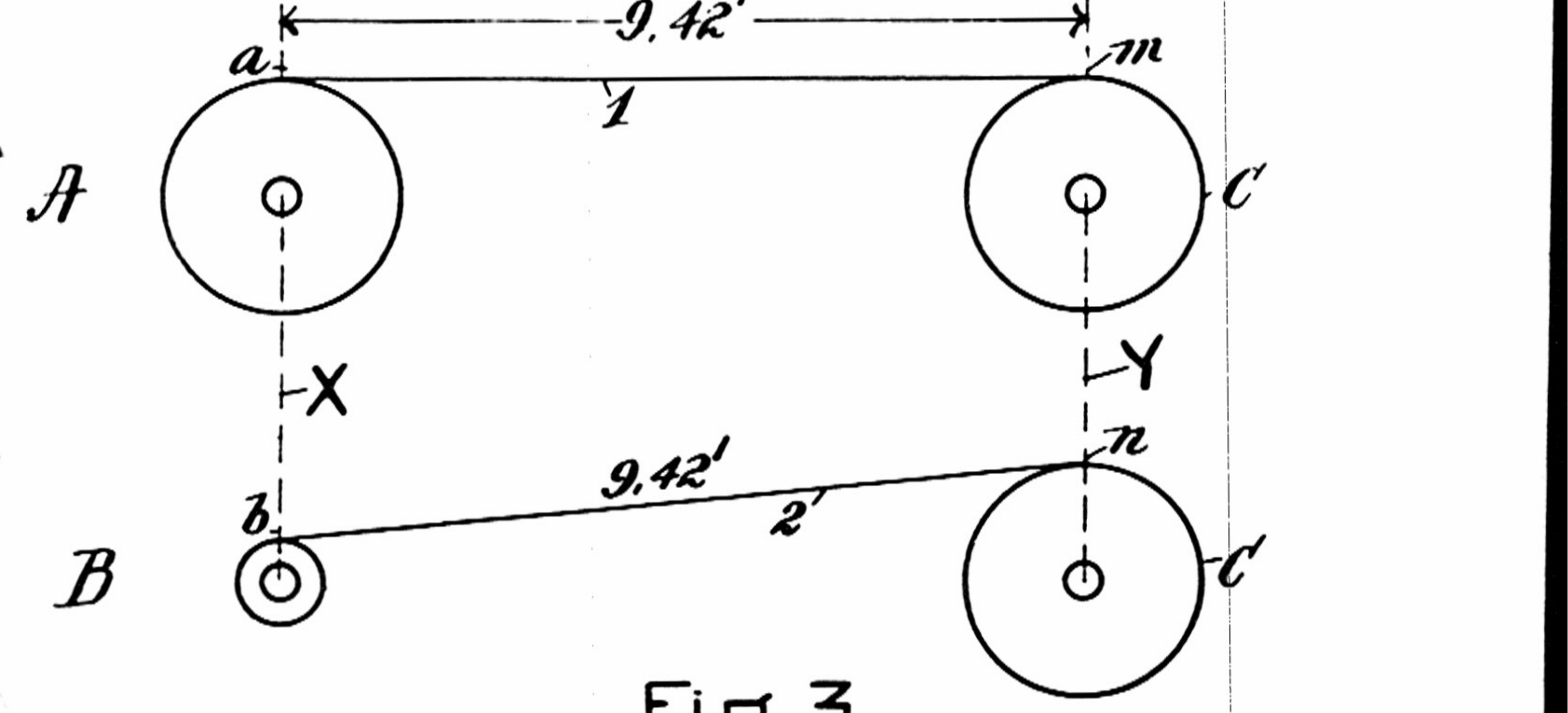
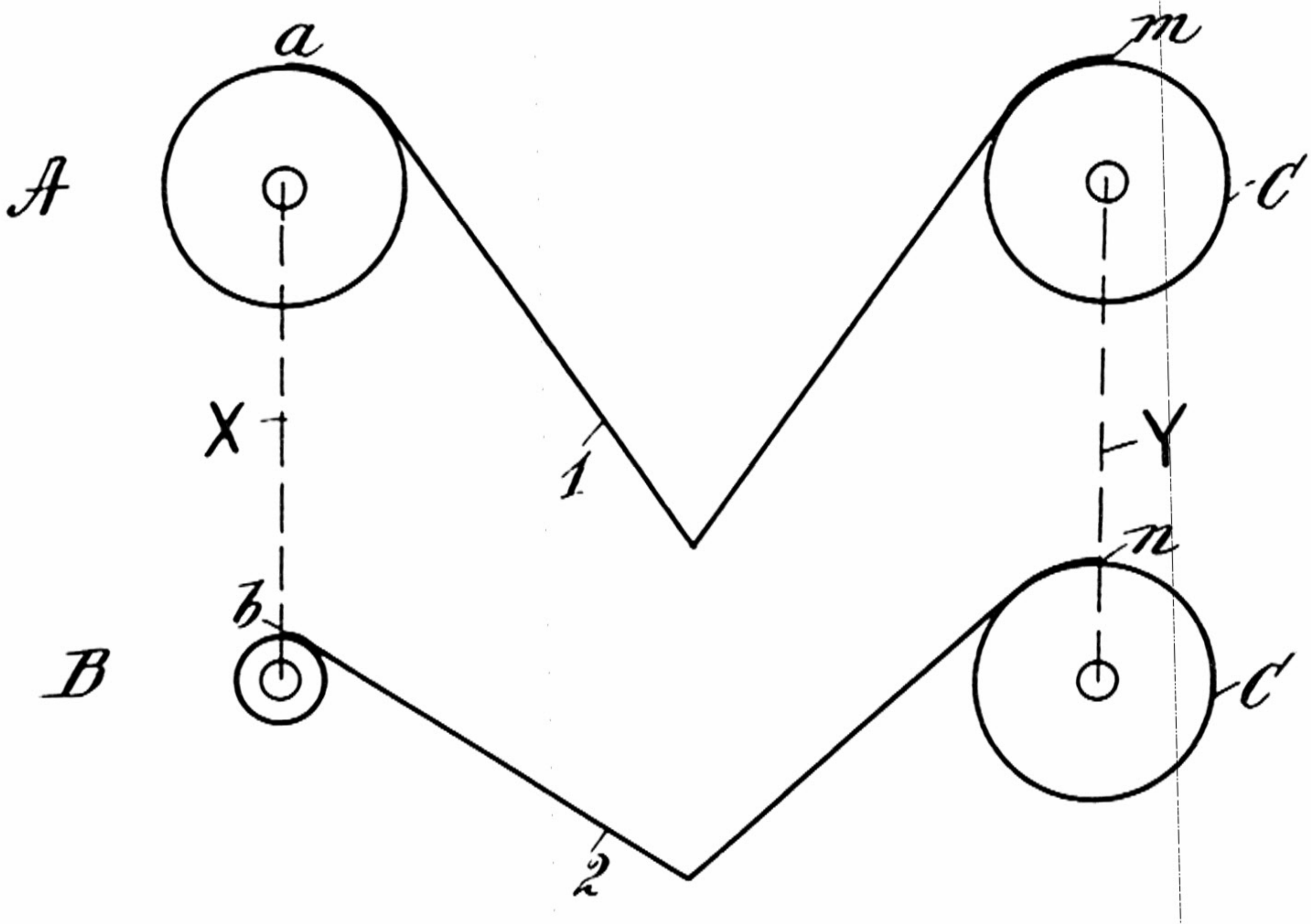


Fig. 3.

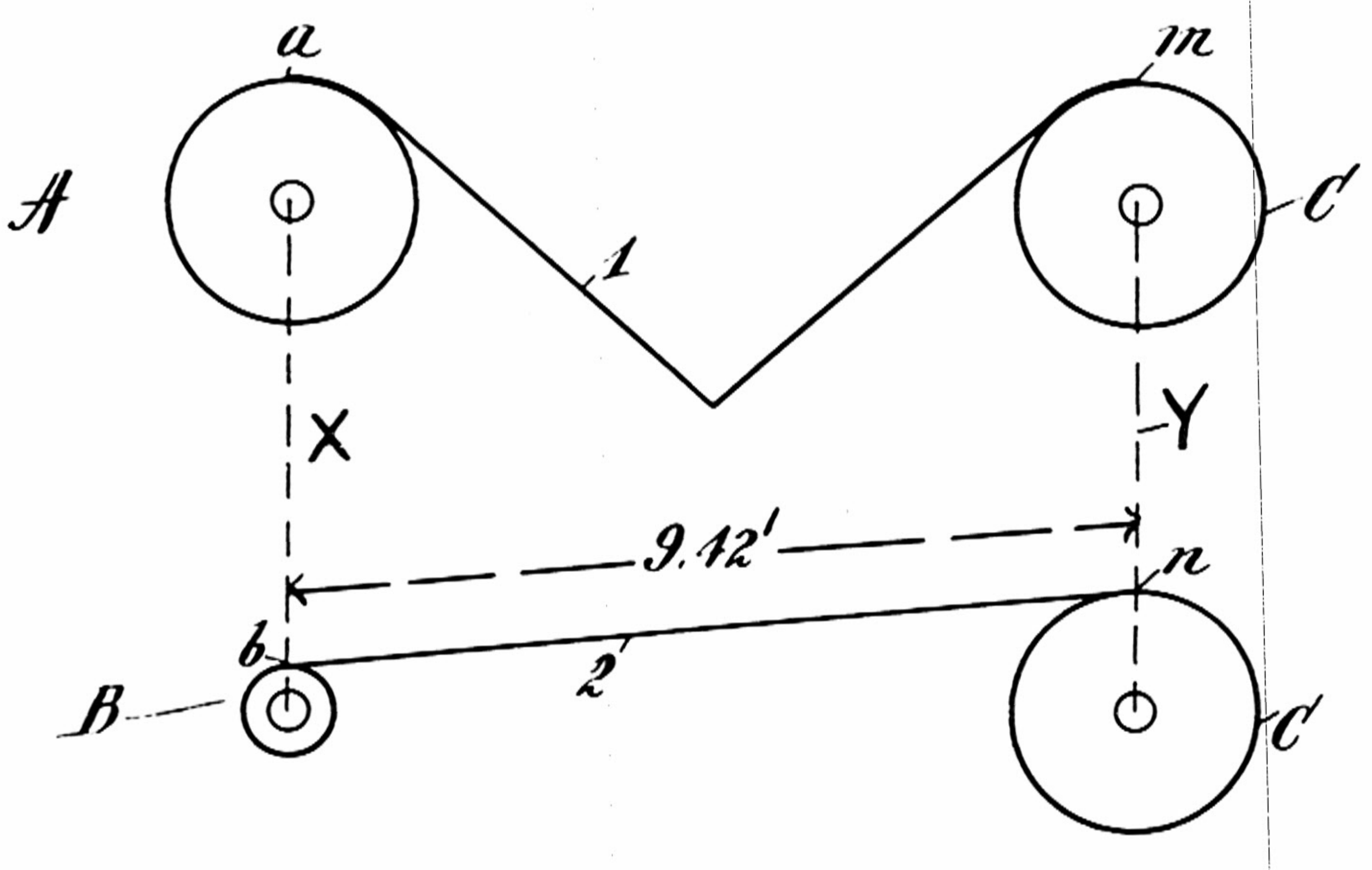
Length of 1 between a and m is 9.42' + 9.42' = 18.84'



Length of 2 between b and n is 9.42' + 3.14' = 12.56'

Fig. 4.

Length of 1 between a and m is 18.84' − 3.14' = 15.70'



Length of 2 between b and n is 12.56' − 3.14' = 9.42'

Fig. 5.

Mark the end of the thread 2, which, as aforesaid, is held in the fingers of the demonstrator, with the letter *b*.

At the end of one revolution of C, the mark *a* will have moved to a^1, 9.42 feet forward, and the mark *b* to b^1, 3.14 feet forward.

Thus, thread 1 will be seen to have traveled three times farther than the thread 2.

Fig. 2.

A conventionalized end view of Fig. 1.

Fig. 3.

Place the cylinder C with its shaft Y-Y exactly 9.42 feet away from the shaft X-X of cylinder A-B.

Without turning A-B, unwind by hand a sufficient length of thread 1 from A to pass over C and make the end fast to C, and so enough of 2 from B to pass over C and make fast to C.

The length of 1 between the tangential points *a, m,* is exactly 9.42 feet and the length of 2 between the tangential points *b, n,* but slightly greater than 9.42 feet, due to the slant of the thread between B and C.

Fig. 4.

Now give A-B a single turn by hand:

9.42 feet of 1 will be unwound from A,

3.14 feet of 2 will be unwound from B, and, therefore,

The length of loose thread 1 between *a* and *m* will be 9.42′ plus 9.42′, and

The length of loose thread 2 between *b* and *n* will be only 9.42′ plus 3.14′.

Fig. 5.

Now give C a turn of one third of a revolution:

Obviously, 3.14′ of both 1 and 2 will be wound on C, for the circumference of C (which has a diameter of 3′) is 9.42′ and one third of 9.42′ is 3.14′.

2 will be taut because 3.14′ of slack have been taken up from the length of loose thread between *b* and *n,* which length is

9.42′ plus 3.14′—see Fig. 4—and the distance between the shafts is 9.42′.

Thread 1, however, will be still slack because only 3.14′ of the length of loose thread between *a* and *m* will have been taken up, and such length of loose thread is 9.42′ plus 9.42′—See Fig. 4. The result is that the length of thread 1 between the tangential points *a, m,* is greater than the distance between the shafts X, Y, by 15.70′ minus 9.42′ or 6.28′.

Further rotation of C (which represents the Loom Beam) will put the entire pull of A-B (which represents the Warp Beam) on thread 2, which will, of course, remain taut, while 1 will become more and more slack.

Returning to Fig. 3.

Instead of giving A-B a single turn by hand as we did to get the result shown in Fig. 4, let us start the machinery that rotates the Loom Beam C and draw the threads off A-B by power:

At the start, for an instant only, both threads 1 and 2 pull together and the Warp Beam A-B is rotated by their joint efforts.

Almost instantly, however, the more rapid unwinding of thread 1 (representative, of course, of many hundreds from the central portions of the yarn mass, the diameter of which is *slightly* greater than that of the yarn masses at the end portions which have settled on account of spreading) will cause its sagging or slackening, and the entire work of rotating A-B will develop on thread 2 (representative, of course, of many dozens of threads at the end portions of the beam) which soon becomes strained to the breaking point.

The Court will understand of course that the difference between the diameters of the central portions of the yarn mass and the end portions thereof when the heads have spread even to the maximum extent is but a very small fraction of an inch and that in the foregoing example the ratio of 3 to 1 is taken for simplicity in illustrating a well known physical fact, viz., that a cord drawn at given speed from a reel of small diameter will cause such reel to rotate

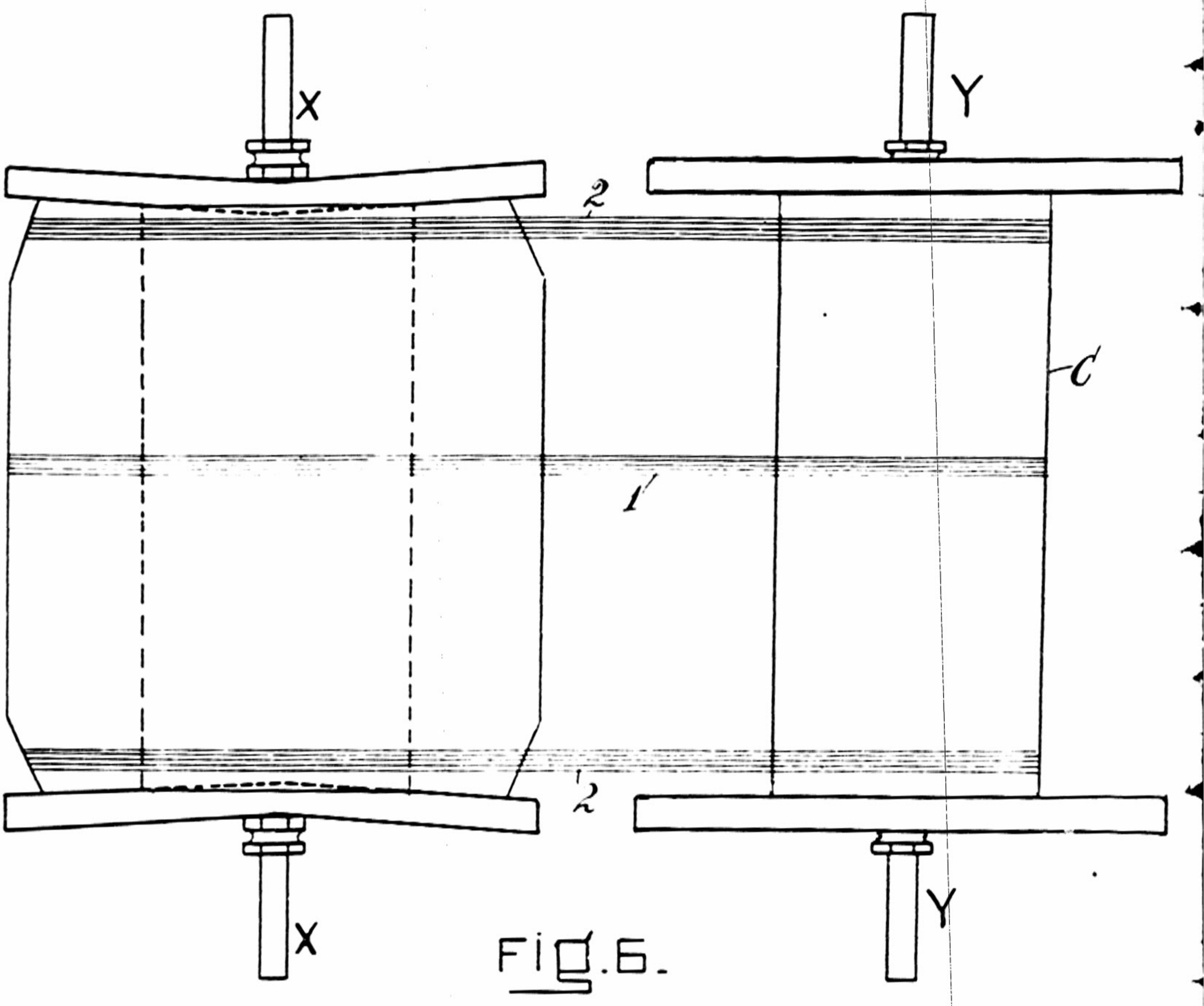


Fig. 6.

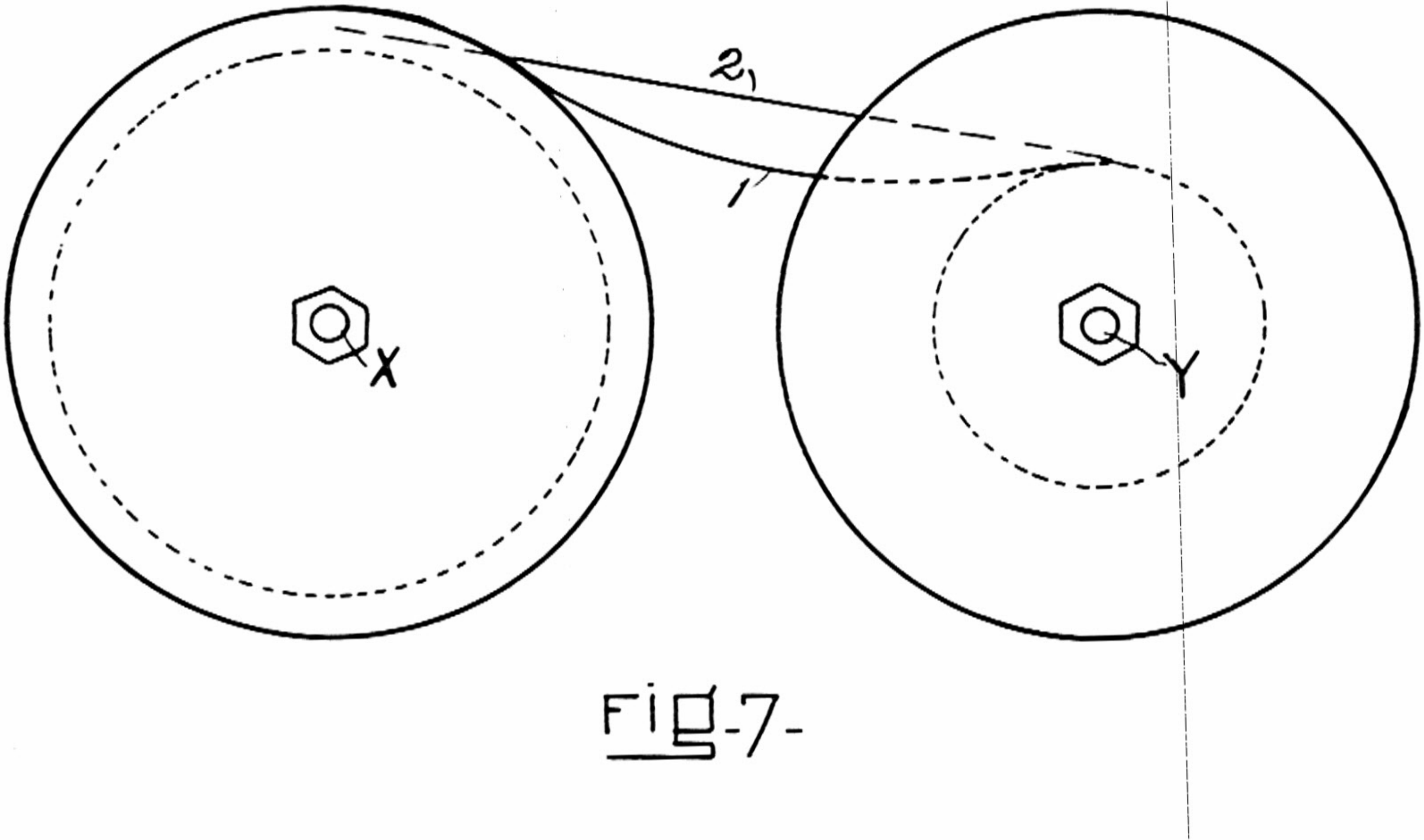


Fig. 7.

faster than a cord drawn at the same speed from a reel of larger diameter.

The Court will remember that the rotational speed of the loom beam, which draws from the warp beam many hundreds of threads, is substantial, and thus the Court will readily see that the breaking point of the end threads is reached in an interval measured by seconds after the starting of the loom beam.

Fig. 6.

A highly exaggerated sketch showing a loom beam C being "filled" from a spread warp beam A-B.

Due to the spreading of the heads the end portions of the yarn mass have "settled" (B B) so that the diameters of the yarn masses near the ends are smaller than the diameter of the yarn mass at the central portion A.

Fig. 7.

An end view of Fig. 6.

Threads 1 are slack and the entire work of rotating the warp beam is done by the end threads 2.

For simplicity, but one loom beam is shown as being filled from the warp beam.

The Court, however, will understand that several loom beams are filled simultaneously from one warp beam (T. R. 17).

Plaintiff testified correctly to the ultimate fact (T. R. 19) and the foregoing diagrams give the correct explanation of said fact.

Heretofore this defect was rectified by adjusting the "expansion comb", a device having a number of thread guiding fingers, which by means of a crank may be adjusted to counteract the effect of the spreading.

Ordinarily, one operator attends to two or three warpers (machines in which warper beams are wound) and if the heads of a warper beam are spread "the operative must give his time wholly to the machine in which the beam with spread heads is being wound" in order to compensate for such spreading by adjusting the expansion comb (T. R. 20).

This matter is mentioned in the Peterson Patent No. 1,484,154 (Exh. 9) (T. R. 98, p. 1 of the specification, end of second paragraph immediately following the preamble).

Appellant testified that he agreed with the first two paragraphs immediately following the preamble of this patent (T. R. 20).

The advance wrought by plaintiff's invention is that thereby the heads may be flexed inwardly, prior to winding, and also that when the spinners detect a spreading of the heads after winding due, for example, to insufficient flexing, the discs 27 may be turned further up against the heads by the huge spanner wrenches, as testified by appellant, and the heads returned to normal position, thereby crowding the end portions of the yarn mass back and correcting the inequality in the diameters of the several portions of the yarn mass; and also that the weavers, if the warp beam is in proper condition when received from the spinners and spreading ensues due to exposure of the warp beam to a humid atmosphere before the loom beam is filled from the warp beam, by using spanner wrenches may in like manner correct the fault.

Appellant might well rest his case on this one point alone because by means of his invention he has placed in the hands of the mills a warp beam *that can be used for yarn of any weight and size and under any and all weather conditions,* while the beam disclosed in the only cited patent in the art to which his invention relates (Peterson) could not, on the uncontradicted testimony of the appellant, produce the result which his own invention accomplishes.

Concerning Peterson appellant testified:

> "If Peterson warper beam is wound with yarn so heavy that the heads are spread, the *operative cannot cause the heads to resume their normal position or bend them inwardly by turning the nut 18 against the outer disc 3* because such turning of said nut would simply push (the central portion of) the head into the middle of the barrel and cause (the outer portions of) the head to spread further outwardly.
>
> Relative movement between the discs 3 and 1 is prevented by the welding of the two together at the periphery of disc 3

> and by the spacer sheet [sleeve] 8 which is interposed between the central portions of the discs.
>
> If a beam involving the construction of the Peterson patent were designed for fine yarn, such as plaintiff's Exh. 5, and this beam were wound with heavy yarn, such as plaintiff's Exh. 10, *it would not be possible for the operative to tighten the nuts 18 and dish the heads inwardly preparatory to filling the beam with such heavy yarn,* because the spacing sleeve 8 would, as I have already said, prevent the disc 3 from moving inwardly toward the disc 1." (T. R. 26, 27.)

The argument that appellant provided a warper beam of universal applicability because by means of it the desired inward flexing of the heads preparatory to winding could be obtained to prevent spreading and also by means of it the heads could be restored to their original form and position if such inward flexing were insufficient to prevent spreading and spreading occurred in spite of such flexing, for example, by the expansion of the yarn mass due to humidity,—was not concocted for the purpose of the trial in the court below.

As early as January 12, 1934 this argument was made to the Patent Office (file-wrapper and contents, paper No. 12, T. R. 61) viz.,

> "By making the discs independent of and separable from the heads a new and valuable result is accomplished and that is that the degree of tension can be varied." (T. R. 61) . . .
>
> "At times during periods of high humidity the yarn will absorb moisture and expand to such a degree as to spread the heads. *The mill operatives thereupon increase the tension on the discs to restore the heads to their original form and position*" (T. R. 62) . . .
>
> "The foregoing facts will be verified by affidavit if desired" (T. R. 62).

This argument was made in appellant's brief before the Board of Appeals, filed May 25, 1934 (T. R. 68) and the foregoing tender of facts was repeated with the comment that the facts "not being denied by the Examiner and no requirement for affidavits showing having been made must be considered as admitted" (T. R. 71).

Plaintiff attained a radically new result which satisfied a long felt want and his efforts were crowned with a high degree of commercial success (T. R. 22, 27), and this notwithstanding that his warper beams cost more than others not provided with anti-spreading devices (T. R. 22).

The fact that an appellant's product was commercially successful and sold on the market at a higher price than his competitors' goods was considered a pertinent factor in the determination of patentability by the United States Court of Customs and Patent Appeals in:

In re Quartz, 90 F. (2) 255, 256.

Although the Peterson patent was open to the public for *eight years* prior to the filing of appellant's application, no one prior to appellant succeeded in producing a *general utility warper beam* that could be used for all yarns under all conditions, and that *eliminated completely all need for an expansion comb.*

Obviously, a beam of the Peterson type having heads strong enough to be used with yarn of a given weight could not possibly be used with yarn of a heavier type, nor could such a beam with heads strong enough to prevent spreading when filled in dry weather with yarn of a given weight be used with yarn of the same weight in humid weather.

It would be impracticable to construct warper beams with heads thick enough to withstand the heaviest pressure that could be exerted on their inner faces because of the undue bulk of such beams and their excessive weight, the elements of momentum and centrifugal expansion being factors that must be considered (T. R. 22). In this connection appellant quoted with approval from the first paragraph of the Peterson patent, as follows:

> "The warp beams in common use are provided with cast iron heads. Inasmuch as these heads sometimes contain casting

> defects and also are apt to become cracked by reason of rough handling, they cannot be safely rotated at high speed."

Manifestly it will be impossible to market a series of warper beams designed respectively for the several grades of yarn varying in size from sheeting yarn (Exh. 5, T. R. 17) to automobile tire yarn (Exh. 10, T. R. 18) because the spinning and weaving mills could not readily accommodate a large number of devices having the bulk of the warper beam.

Before the advent of appellant's invention his company received complaints from its customers against its warper beams but after the introduction of the beams with the anti-spreading discs, which form the subject matter of the appealed claims, no complaints were made (T. R. 23). The Court will note that the annual sales of appellant's beams increased rapidly and progressively with the exception of one year, 1934, in which the indices of general business showed fair activity for the first two months followed by a decided slump lasting until November. The sales graph (T. R. 103) is impressive, and at the trial in May, 1937, appellant testified that his company was selling its warper beams with steel anti-spreading discs at a rate somewhat higher than last year (T. R. 23, 27).

THE PETERSON WARP BEAM PATENT.

The Peterson patent (Exh. 9, T. R. 26, 98) discloses a warper beam having heads of double truss construction (T. R. 100, lines 37–56, inc., claim 1 and other claims). A truss construction always comprises a compression member, a chord or tension member, and a strut. The conical or dished disc 5 is the compression member, the central portion of the large disc 1 is the tension member, and the spacing sleeve 8 is the strut of the inner truss. The large disc 3 is the compression member, the entire disc 1 is the tension member and the spacing sleeve 8 is the strut of the larger or outside truss.

An enlargement of the central portion of Peterson's Fig. 3 was put in evidence as Exh. 12 (T. R. 104) in order that the arrangement of the members forming the trusses might more readily be understood. Like every truss the parts thereof are *rigidly* secured together and in the present instance the periphery of the disc 5 is spot welded to the disc 1 at 6 and the periphery of the disc 3 is spot welded to the disc 1 at 4 (Peterson specification, T. R. 99, lines 80 to 92, inc.).

The truss with all its members rigidly connected so that there is no relative movement between any two of them form the head and is a substitute for the cast iron heads theretofore used (p. 1, Peterson specification, line 14) and is a substitute also for another prior art failure, viz., the heads with 'radial stiffening ribs" (Peterson specification, p. 1, line 27).

A specimen of the Peterson disc kindly furnished by the inventor was put in evidence as Exh. 15 (T. R. 26).

As to this head and the Peterson patent, appellant testified as follows:

> "The weight of this head is about sixty pounds. The Peterson patent does not show a head having a stiffening disc, such as the disc marked 27 in the drawings accompanying my application. The Peterson head consists of a truss formed of three members, viz.. the discs 1 and 3 and the spacing sleeve 8, and an inside truss consisting of the central portion of the disc 1, the smaller disc 5 and said spacing sleeve. As in any other truss, all the members are rigidly interconnected. The disc 3 is spot welded at its periphery to the disc 1, as indicated at 4. The periphery of the disc 5 is spot welded to the disc 1, as indicated at 6. The spacing sleeve 8 surrounds the internal sleeve or hub 7. The ends of the hub are spun over to secure the parts of the head rigidly together.
>
> "In the truss consisting of the central portion of the disc 1, the disc 5 and the spacing sleeve 8, the compression member is the disc 5, the chord or tension member is the central portion of the disc 1, which lies within the circle defined by the barrel, and the strut is the sleeve 8. The construction of the truss-like head is quite similar to that of a railroad bridge in which a number of pieces secured together are employed in place of *one very large piece.*

> "Peterson, therefore, does not show a head and an *adjustable disc* that can be forced up against it, but an arrangement of discs that are welded together to form a structure which has the stiffness and strength of *one solid piece*."

To omit such welding together of the discs 3 and 1 would be a departure from the teaching of the Peterson patent, which would render the structure inoperative and completely destroy the value of the truss construction which depends upon the rigid joining of the three members thereof, because it is only by such rigid connection of its members that a truss formed of several light members can have the strength of "one solid piece" of much greater size and weight, *e. g.*, the "cast iron head" mentioned in the Peterson patent, page 1, line 14.

Even if the spot welding whereby the discs 3 and 1 are rigidly connected were omitted there could be no relative movement between the said discs on account of the "sleeve or hub 7" and "spacing sleeve 8" interposed between the discs (Peterson specification, p. 1, lines 97–99, T. R. 99). It will be noted that the "end of the hub 7 are expanded or spun over to secure the parts of the head rigidly together" (Peterson specification, p. 1, line 103, *et seq.*, Exh. 12, Enlargement, T. R. 104. Appellant's testimony, T. R. 27).

Appellant's invention is clearly patentable over Peterson for each of the two claims before the Court is for a new combination of old elements producing a new and useful result, a result that could not be achieved by the Peterson structure, which as shown by Peterson's affidavit and that of his only customer, Corn, went into commercial use to an extremely limited extent only. (Exh. 16, Peterson Affidavit, T. R. 105; stipulation concerning same, T. R. 106; Exh. 17, Corn Affidavit, T. R. 108; stipulation concerning same, T. R. 107).

The appealed claims (T. R. 4) do not "read in terms" on Peterson because (a) the discs are characterized as being "independent of and separable from" the heads; (b) and in "threaded engagement" with the shaft (claim 9); and (c) because each is limited to "means for locking each said disc against axial movement with respect to the shaft".

The limitation that the discs are independent of and separable from the heads in both claims and especially the further limitation in claim 9 that they are in threaded engagement with the shaft, implies in itself relative movement between the discs and the head and this implication is confirmed by the last element of each claim, namely the means for locking the discs against axial movement.

The "means", aforesaid, in the exemplification of the invention shown in Fig. 3, are the screw threads of the shaft and those of the central hole passing through the disc, together with the nut 29 in engagement with said threads. In an unillustrated embodiment of the invention, wherein the disc is not in threaded engagement with the shaft (p. 8, *supra*), the "means", aforesaid, is the nut 29 threaded to the shaft.

In the first case, by means of the spanner wrench co-operating with the spanner holes 28, a disc is turned up against a head with the desired force and locks itself in the position to which it has been turned, although as a matter of precaution, the lock nut 29 also may be used. In this connection it might be remarked that after the disc has been turned up against the head with the force required to counteract the spreading tendency of the yarn mass, substantial power is required to loosen it.

In the second case, where the central hole of the disc is not threaded and the nut 29 is employed to force the same against the head, the said nut itself is the "means" of the last clause of each claim.

By virtue of the elements enumerated, viz., the disc, whether its central hole be threaded or not, and the nut 29, the heads "are prevented from spreading when the beam is filled with yarn".

Not so, however, in the Peterson case, wherein the nuts 18 play no function whatever in the prevention of spreading but serve merely to clamp the truss-like head structures against the barrel. (Peterson specification, p. 2, line 18, T. R. 100). The prevention of spreading is affected solely by the truss construction explained in detail, as aforesaid, on page 2 of the Peterson specification, beginning line 37.

It will be clear, therefore, that the combinations set forth in the two claims at bar are not found in the Peterson patent specifically, nor are they found therein generically, even disregarding the limitation that the discs are "independent of and separable from" the heads because the last element of each claim,—"means for locking", etc., is not present in the Peterson structure.

Not only are the combinations defined by appellant's claims not in the Peterson structure, but there is no suggestion in the patent that any good result could be accomplished by eliminating the spot welded connections of the bracing discs 3 and 5 to the head, and the hub and sleeve structures 7 and 8, whereby the head disc 1 and bracing discs are formed into one integral structure, and said hub and sleeve structures as well as said spot welded connections *must all be eliminated* to permit the relative movement of the discs 3 and 5 with respect to the disc 1 by the further turning of the nut 18 along the shaft and effect a variation in the pressure of the disc 3 against said disc 1.

Thus it will be seen that even although it were believed that the jack spool patents hereinafter discussed would tell the skilled worker in the warp beam industry to make the bracing disc 3 of Peterson independent of the head and also to make the bracing disc 5 independent thereof, *the resulting structure would not respond to the claims now before the court.*

And not even appellee would suggest that the skilled warper beam artisan could receive from the jack spool patents an inspiration *to remove the hub and sleeve* (7 and 8) from the Peterson structure in order to attempt its conversion into a general utility warper beam. (As above pointed out, the elimination of the welded connections would render the Peterson structure inoperative and would *not* convert it into appellant's warper beam.)

THE JACK SPOOL PATENTS.

The Marcy patent is found at page 111 of the Transcript. A model thereof, Exh. 14, was put in evidence (T. R. 24).

The Taft patent is found at page 115 of the Transcript. A model thereof, Exh. 13, was put in evidence (T. R. 23).

There is no substantial difference between the disclosures of these two patents. They belong to a foreign and non-analogous art with respect to the art of warper beams, and this is so, notwithstanding that jack spools and warper beams are both appliances used in the art of textile machinery, for *the warper beam is not an appliance used in spinning.* Careful consideration will show that the objects, structures and results are so completely different that the problems confronting a worker in the warper beam art could not possibly be before an artisan in the jack spool industry and therefore no worker in either art could find anything in the other that would assist him in solving his problems. It is in that sense, of course, that it is proper to say that jack spool patents are in an art foreign to the art of warper beams.

As hereinbefore pointed out, page 5, *supra,* a warper beam (sometimes called a warp beam or a section beam) plays no part whatever in the operation of spinning and it is only *after the completion of such operation* that it is used as a means to store a large quantity of yarn and as a means for transporting the same to the weaving mill.

The *first* step in the operation of spinning involves the use of the jack spool, which is a small spool weighing from six to seven pounds and about three feet in length, provided with heads about a foot in diameter (T. R. 23) on which is wound a loosely twisted yarn "similar to cotton batting in its consistency and called 'roving' " (T. R. 16). About 150 pounds of roving are carried by the jack spool and "this roving does not tend to force the heads outwardly" because, of course, of its comparatively small weight and the nature of its consistency (T. R. 25).

The roving is drawn off the jack spool onto another device and spun into tightly twisted yarn. As in the case of the drawing off of the yarn from the warp beam to the loom beam *after* the comple tion of the spinning process, no mechanism is employed to rotate the jack spool and the rotation thereof is effected solely by the pull of the roving, the end of each strand of which is attached to a device actuated by mechanism just as the loom beam is rotated mechanically during the filling of the same from the warp beam (T. R. 16, 24, 26).

Therefore "if the (jack) spools were heavy the roving would break". Because of the frail nature of the loosely twisted roving the jack spools are required to be extremely light. Appellant's company tried to market a jack spool having hardwood heads whereby the weight of the spool was increased about a pound. As originally made by appellant's company the weight of the jack spools made of pine, was from five to six pounds and the use of the hardwood heads increasing the weight of the spool by not more than 20 percent rendered these spools quite unfit for use (T. R. 24).

The rotational speed of the jack spools during the filling operation is from 80 to 100 revolutions per minute and therefore, in sharp contradistinction to the warp beam where momentum and centrifugal force (functions of weight and speed) are the controlling and limiting factors, such factors play "no part whatever" in the design of jack spools. For this reason "*if* the rovings did spread the heads it would be possible to make the heads thick enough and heavy enough to prevent such effect, provided the weight was kept down" (T. R. 25).

Each of the jack spool patents pleaded in the answer is mounted for rotation in the machine in which it is used by "gudgeons" or stub shafts projecting through the end portions thereof as distinguished from the shafts of the warp beams which extend all the way through the barrel and project beyond the heads. Because of the necessity for reducing the weight of the jack spool to a minimum such gudgeons must be employed. "The chief reason for using the gudgeons instead of a single shaft is to save weight" (T. R. 24).

It is difficult indeed to treat the jack spool patents seriously.

Appellant's testimony concerning the same on pages 23 to 26, inc. of the Transcript is clarity itself.

The salient points are:

1. Taft's object is to provide:

> "An improved construction which may be easily applied and which will not become loose during the operation of the spool",

and

> "To provide a fastener for the gudgeon of the jack spool which may be easily applied and locked in place, the construction being such as to cause the locking means also to lock the spool of the head against removal" (Taft specification, T. R. 116, lines 9–20, inc.).

The Marcy patent states no object and the only advantage therein set forth is found in the last paragraph of the specification (T. R. 113) to the effect that the screw threaded washer L and the nut J "act as check nuts one for the other".

Clearly the bearing plate 5 of Taft and the washer L of Marcy are nothing but "outboard bearings" for the stub shafts or gudgeons and with such gudgeons afford a means to hold together the several parts of the spool, viz., the barrel, the head and the gudgeons, and prevent them from working loose during rotation.

2. For the reasons very clearly set out by appellant on page 23 of the Transcript the degree of pressure of the disc 5 of Taft against the head cannot be varied and for the reasons explained by him on page 25 of the Transcript, it would be impossible to vary the pressure of the washer L of Marcy against the head by "turning the gudgeon" or, for that matter, by any other means disclosed.

Manifestly in accordance with the disclosure of these two patents the "bearing plate" 5 of Taft and the "concave washer" L of Marcy must bear against the heads with sufficient force to prevent the parts from coming loose, but having screwed the spindle or gudgeon 15 of Taft into the nut 18 and having turned the washer L of Marcy along the threaded gudgeon N sufficiently for this purpose, no further increase in the degree of pressure of said bearing plate or concave washer against the respective heads can be effected.

3. "It is not essential for Taft's purpose that the discs 5 should be of greater diameter than the beam or barrel 1" (T. R. 23).

   "It is not essential to Marcy's object and the result effected by his structure to have the washer (L) of greater diameter than the beam" (T. R. 25).

4. The disc 5 of Taft and the washer L of Marcy might be made larger in diameter than the barrel or smaller in diameter, without producing any change in result, such result being to hold the parts together (T. R. 25).

In neither specification is there any suggestion of the desirability of making the disc 5 of Taft or the washer L of Marcy larger in diameter than the barrel.

ACCIDENTAL SHOWING.

In each patent the disc or washer is shown as *slightly* larger in diameter than the barrel.

And this is a mere accidental showing, a mere vagary of the draughtsman, in view of plaintiff's uncontradicted testimony that the relative diameters of the barrel on the one hand and of said disc and washer on the other is immaterial.

> *Brill* v. *Third Avenue Co.*, 103 F. 289, 293, C. C. S. D. N. Y.
>
> *General Elec. Co.* v. *City of Dunkirk*, 211 F. 657, 663, C. C. A. 2.
>
> *Gray Telephone Pay Station Co.* v. *Baird Mfg. Co.*, 174 F. 417, 421, C. C. A. 7.
>
> *United States Metallic Packing Co.* v. *Hewitt Co.*, 236 F. 739, 743, C. C. A. 7.

In the General Electric-Dunkirk case, the Court of Appeals for the Second Circuit said that a prior patentee's failure to describe a certain construction justified the presumption that he

> "had no such conception as the defendants accredit to him, and the invention is not to be ascertained merely from the drawings. *Canda* v. *Michigan Malleable Iron Co.*, 124 F. 486; *Taylor Burner Co.* v. *Diamond*, 72 F. 182; *Australia Knitting Co.* v. *Wright's Health Underwear Co.*, 119 F. 921."

In the *Gray Telephone case*, as well as in the Brill-Third Avenue and the *U. S. Metallic Packing cases*, it was held that:

> "A patent for a mechanical combination is not anticipated by a *drawing* in a prior patent which incidentally shows a similar arrangement of parts, where such arrangement is *not essential* to the first invention, and was *not designed, adapted, or used* to perform the function which it performs in the second invention, and where the first patent contains *no suggestion* of the way in which the result sought is accomplished by the second inventor."

(Also, *Mosler* v. *Surie*, 209 F. 364, 366, C. C. A. 2.)

It will be manifest,—

That a disc 5 larger in diameter than the barrel *is not essential* to the Taft structure;

That the disc 5 shown by Taft was *not designed* to perform the function accomplished by plaintiff's disc;

That it is *not capable* of performing such function;

That it was *not used* to perform that function; and

That the Taft patent contains *no suggestion* of the way in which plaintiff's result is accomplished.

Furthermore, Taft did not claim a disc of greater diameter than the barrel.

In:

Beckwith v. *Malleable Iron Range Co.*, 174 F. 1001, 1011,

the Court made a point of this precise fact, saying:

> "We have seen that the convex back-plate was not made an element by Keep [prior art patent] in either of his claims; neither is there any reference to specifications. As matter of

> law, a mere casual reference to a given feature, such as Keep makes in his specification, to a convex backplate, will not support a patent if the inventor does not rely upon it in describing the substance of his invention. *Waterman* v. *Lockwood,* 125 F. 290, 60 C. C. A. 204; *Greene* v. *United Shoe Co.,* 132 F. 973, 974, 66 C. C. A. 43."

The disc 5 of Taft is precisely what he says it is in his claims 2, 3 and 4, viz., "a bearing plate" for the gudgeon, that is to say, a support for the outer end thereof, the inner end being held in position by the nut 18. After the gudgeon has been screwed into said nut, a spring 20 having a slot 22 in one end is forced through the hole 21 in the barrel and its bifurcated end passes over the flattened section 19 of the gudgeon thereby preventing the latter from turning during the operation of the spool or from being turned to increase or reduce the pressure of the plate against the head when the spool is loaded, even assuming that such turning would have this effect which, of course, is not the case (T. R. 23, 25).

Remembering that plaintiff's warp beam is provided with means for varying the pressure of the disc 27 against the head to compensate for the force exerted on the latter by the yarn mass, the very fact that Taft's spring lock 20 would prevent the turning of the gudgeon after the spool is filled will show at once that Taft did not have any conception of appellant's invention.

In this connection, the Court will recall that before filling appellant's beam with yarn, for example, heavy tire fabric yarn, the discs are turned up against the heads with such force that the outer portions are inclined inwardly toward each other by an amount which the user learns by experience is sufficient to counteract the oppositely directed force exerted against the inner face of the heads by the yarn in question. Sometimes, however, the user makes a mistake and the inward inclination of the heads is too great to be compensated for by the force exerted against the inner faces of the heads by the yarn mass. It being absolutely essential that the heads should be at right angles to the axis of the barrel during the operation of the beam, the operator using the spanner wrench turns the disc slightly in reverse direction, thereby reducing the pressure of the disc against the head until the latter resumes its normal position at right angles to the barrel.

Taft's claims 1, 2 and 5 are directed to the spring lock 20.

There can be no possible doubt of the fact that Taft's disc 5 is merely a fastener or bearing plate for the gudgeon and a means to "lock the head of the spool against removal".

The foregoing cases were discussed and applied by the United States Court of Customs and Patent Appeals in:

In re Daniell, 34 F. (2) 995, 999, 1000.

This Court in:

In re Haskell, 278 F. 326, 328,

considered an analogous question in a process case.

See also:

In re Martocello, 73 F. (2) 635, 637,

wherein the United States Court of Customs and Patent Appeals held that in the *absence of a specific statement concerning a certain relation between members and the absence of any claim therefor* lead to the conclusion that whatever showing there may have been made of such spaced relation

> "was an *accidental* showing, was not such a showing as would make appellant's invention obvious to one skilled in the art, and was not an anticipation."

See also:

Vacuum Cleaner Co. v. *Thompson Mfg. Co.,* 258 F. 239, 241,

in which case a prior patent was alleged to disclose a "narrow slot" which was apparently an important feature in the invention of the patent in suit. The Court said:

> "let it be granted, but, if so, it is apparent that the width of the slot had no significance to the inventor. It was purely '*acci-*

> *dental*'. It had no functions, so far as the inventor knew. To the world what was disclosed was a slot; whether it would be narrow or wide was not disclosed. Kenney was the first to disclose the narrow slot, and that this description is sufficiently definite is decided in the foregoing cases."

The foregoing applies, *mutatis mutandis,* to the Marcy patent which was cited merely to show a *threaded* gudgeon, appellant's claim 9 calling for the threaded engagement of the disc and shaft.

The concave washer L of Marcy affords a bearing plate for the gudgeon in the same manner as the disc 5 of Taft and supports the outer end thereof, the inner end being held by the nut J. After the gudgeon has been screwed into the washer and into the nut J sufficiently to cause the washer to hold the head G tightly against the barrel, the pin O is driven through a hole in the barrel and passes through a hole in the spindle (gudgeon) N to prevent any further turning of such spindle or gudgeon in either direction.

It will therefore be clear that there is no reason whatever why the Taft "disc" or the Marcy "washer" should be of greater diameter than the barrel. If its diameter were exactly equal to that of the barrel, or somewhat less than that of the barrel, the result effected would be precisely the same as that obtained by making the diameter of the disc a little larger than that of the barrel or indeed very much larger (T. R. 25).

It will be remembered in this connection that the heads of a jack spool are not subjected to outward pressure by a heavy load of hard wound yarn, and it will be apparent, therefore, that there would be no object in extending the disc 5 or washer L all the way out to the outer periphery of the head, or indeed making them, or either of them, even slightly larger in diameter than the barrel.

The disclosure of a "disc" or "washer" for locking the head of the spool against removal, as one having a diameter *not* from 30 percent to 50 percent greater than that of the barrel (appellant's specification, p. 3, paragraph 3, T. R. 34) but a diameter practically equal to that of the barrel, manifestly is a mere vagary of the draughtsman.

THE DEFENCES.

While this proceeding is "not a technical appeal from the Patent Office nor confined to the case as made in the record of that office" (*Lucke* v. *Coe,* 69 F. (2) 379, 381) defendant elected to rest on the Patent Office record and put in evidence the decision of the Board of Appeals (Item F, Defendant's Exh. 1) which of course was included in plaintiff's Exh. 1, file-wrapper and contents (T. R. 28).

The Board held that Peterson disclosed a beam each head of which

> "is laterally supported by a concave disc 3 which is shown as engaging the side face of the head near its periphery instead of adjacent the barrel as in the application and in the patents to Marcy and Taft. The disc 3 instead of being separable as in the application and the patents to Marcy and Taft, is rigidly connected to the head" (T. R. 83).

The learned trial Court undoubtedly followed the view expressed by the Board of Appeals.

It will be apparent that the Board wholly misconceived the nature of the Peterson structure and that every thought expressed in the foregoing quotation, with the exception that in the Marcy and Taft patents the discs engage the heads adjacent the barrel, is in error.

In the Peterson patent the disc 3 does not *engage* "the side face of the head" but *forms an essential part* of the head A.

Referring to the patent specification (T. R. 99, lines 72–105) one finds that:

> "Each beam head A comprises a main disc 1 having a peripheral outwardly extending flange 2 which is concave to provide a belt race. The beam [head] further comprises a dished or concave bracing disc 3 of slightly smaller diameter than the main disc . . . The beam head further comprises an internal bracing disc 5 . . . The main disc and the two bracing discs 3 and 5 . . . are secured together . . . by means of

> a sleeve or hub 7 . . . and through a spacing sleeve 8 which is interposed between the main disc and the bracing disc 5 . . . The ends of the hub are expanded or spun over to secure the parts of the head rigidly together."

Beginning at line 107, page 1 of said specification is a description of means for preventing relative movement between the "beam head A" and the barrel.

On the second page of the specification (T. R. 100) beginning at line 18, we read:

> "The beam head A is clamped tightly against the end of the barrel B by the nut 18 . . ."

By the description beginning line 28, page 2 of the specification, it is seen that the "beam head construction . . . is relatively light, provides the necessary strength to resist centrifugal force, and is also sufficiently rigid to prevent spreading due to the pressure of the yarn load".

Then begins at line 37 the description of the head from its aspect as a truss, or rather a double truss, which has already been discussed under the caption "The Peterson Warp Beam Patent" (*supra,* p. 19).

Finally in claims 5 and 6 we find that the "beam head" consists of a "main disc" (1) and a "bracing disc" (3) "having its periphery rigidly secured to the outer side of the main disc".

While these are the only claims directed specifically to the "beam head" it will be noted that in other claims, such as 1–4, wherein the head is claimed in combination with the barrel, the head is specified as comprising the main disc and the bracing disc rigidly secured thereto.

The Board of Appeals therefore started with the erroneous assumption that the "main disc" 1 was a "head" and that it was supported by the "bracing disc" 3, whereas of course the Peterson head structure A does *not* consist of the main disc 1 but is a truss comprising said main disc 1 *and* the concave disc 3 which, respectively, are the tension and compression members of the truss, together with the sleeve 8, which is the strut member of such truss, the whole being as the patentee states "relatively light" and having the necessary strength to resist centrifugal force and prevent spreading.

In short, the Peterson beam head A is a *unitary* head formed by the two discs 1 and 3 spot welded together, and the sleeve 8, and is a substitute for the solid cast iron heads of the art prior to Peterson (specification, p. 1, line 14).

It is no more proper to suggest that the flat disc 1 is "laterally supported" by the concave disc 3 than it would be to say that in a solid cast iron disc of rectangular cross section the inner face or portion was "laterally supported" by the outer face or portion.

The above quotation from the Board's opinion (T. R. 83) errs in a most astonishing manner in asserting that in appellant's application the anti-spreading disc (27) is "adjacent the barrel".

Patent Office drawings are not intended to be working drawings and are not made to scale.

> *Munising Paper Co.* v. *American Sulphite Pulp Co.*, 228 F. 700, 703, C. C. A. 6.
>
> *Hudson Motor Car Co.* v. *American Plug Co.*, 41 F. (2) 672, 673, C. C. A. 6,

and in asserting that the disc 27 is adjacent the barrel 15 in appellant's drawings (T. R. 39) it is apparent that the Board wholly disregarded the data contained in paragraph 3, page 3, of appellant's specification (T. R. 34) giving example of the relative sizes of the stiffener discs and the barrel, viz., that they are from 30 percent to 50 percent greater in diameter than the barrel.

Having made two erroneous assumptions, viz., that the disc 1 of Peterson is a beam head laterally supported by the disc 3 "engaging the side face of the head near its periphery" and that appellant's stiffener disc engages the side face of the head 19 "adjacent the barrel", the Board proceeded to fall into a third error, to wit,—that the discs of Marcy and Taft "are clearly shown as being of greater diameter than the barrel and there is no reason for supposing that the showing in this respect is not intentional", this error residing in the Board's total disregard of the law concerning accidental showings. The Board then drew its conclusion from the foregoing erroneous assumptions as follows, to wit:

> "It is clear from the disclosure of the disc 3 in Peterson that no invention would be involved in making the discs of Taft and Marcy of still greater diameter than illustrated in these patents."

(As pointed out p. 27, section 4, *supra,* if they were made larger, there would be no change in result.)

It is indeed difficult to follow the mental workings of the Board. In the last analysis, their conclusion boils down to the following:

The Peterson patent discloses a warp beam having two heads each consisting of a truss formed of three rigidly connected and inseparable members, one of them, the compression member, being a disc 3 of much greater diameter than the barrel. Notwithstanding that this disc 3 forms an inseparable part of the truss and its function is entirely different from that of the discs of the Taft and Marcy patents, which are for structures entirely different in function and result from a warp beam, the Board seriously asserts that (a) any skilled worker in the warp beam art would learn from the Peterson patent that the Taft and Marcy discs could be made larger in diameter and if so modified the jack spools would anticipate; or (b) that the Peterson disc 3 is the equivalent of the Taft and Marcy discs 5 and L (performs the same function in substantially the same manner for the accomplishment of the same end) and therefore could be substituted for the latter, and if so substituted the Taft and Marcy structures would anticipate.

With reference to claim 10, limited to a shaft the ends of which extend beyond the heads, the Board holds that "no invention would be involved in the provision of a single central shaft in lieu of the two stub shafts or spindles illustrated in these patents to Marcy or Taft in view of the disclosure of the shaft C in Peterson", but it has been shown by appellant's testimony that stub shafts are essential in jack beams (T. R. 24), and that a single shaft cannot be substituted for the gudgeons in a jack spool.

In order to make the Board's suggested reconstruction of the jack spools in accordance with the information furnished by Peterson it would be necessary to remove not only the gudgeons but the elements which prevent the variation of pressure exerted by the discs 5 (Taft) and washers L (Marcy) against the heads, viz., the locking nuts (18 Taft, J. Marcy), the webs 6 and 7 of Taft and the "nostrils" in which they are received, and the wooden plug C of Marcy. If these elements were removed, the shaft C of Peterson could readily be passed through the barrel.

In such case the discs or washers would be placed over the projecting ends of the Peterson shaft C, which are threaded, and finally such discs or washers would be turned along the threaded portion of the shaft to clamp the several parts of the structure together.

The result would be a spool utterly incapable of performing the functions of a jack spool because of its weight (T. R. 24) and it certainly would not be a warp beam.

Suggestions of this type frequently are made by Patent Office Examiners who have no practical knowledge of the art and whose information is obtained solely from their reading of patents.

It will be noted that the astonishing structure resulting from the substitutions stated by the Board would be a spool having *removable* heads clamped against the barrel by the nuts 18.

In Peterson the heads are clamped against the barrel by the nuts 18 (Peterson specification, p. 2, line 18).

The point has heretofore been made that in the Taft and Marcy jack spools the heads are clamped against the barrels by the discs 5 (washers L) and that after said heads have been clamped to the barrel by the devices arranged to fasten the several elements of the jack spool together, the pressure exerted by the discs (washers) against the heads cannot be varied (appellant's testimony, T. R. 23, 24).

It has already been pointed out that after the elements of the

Peterson warp beam have been assembled and secured in position by the nuts 18, no further turning of the latter would increase the pressure of the discs 3 against the heads or serve to flex the same inwardly (T. R. 27).

It is to be remembered that in appellant's invention the heads are ***not*** clamped to the barrel and held in position thereto by the discs 27, but are *permanently* attached thereto by the rods 18 and the nuts 20.

RECONSTRUCTION OR BUILDING UP.

In the supposititious built-up structure suggested by the Board as one that might readily be made and which if made would anticipate appellant's claims, it is a fact that the further screwing of the nuts 18 along the shaft after they had been turned up to the discs 3 sufficiently to hold the assembly together, would vary the pressure of the discs 3 against the heads and might indeed flex them inwardly; but for what purpose? The jack spool so reconstructed could not possibly be used because of its weight (T. R. 24) and as appellant testified, there is no tendency for the heads of a jack spool to spread because the lightly twisted roving does not tend to force them outwardly (T. R. 25).

If, on the other hand, one starts with the Peterson patent and assumes that the jack spool patents teach the warp beam artisan that the disc 3 might be made "independent of and separable from" the head of which it forms a part, by the simple expedient of eliminating the welding of the periphery of the disc 3 to the outer face of the disc 1 at the point 4, (a) no further tightening of the nuts 18 would vary the pressure of the disc 3 against the disc 1 because the spacing sleeve 8 would prevent any movement of the disc 3 toward the disc 1 (see enlargement Peterson drawing, T. R. 104, and appellant's testimony, T. R. 27); and (b) such change would be a departure from the teaching of Peterson which is to substitute a light but strong truss for the solid cast iron head of the warp beams theretofore in use. This court, as well as the court below, have condemned the rejection of claims in patent applications based on the reconstructing of the prior art in view of the invention of the application itself, and styled them:

> "*nunc pro tunc* solutions of the problems."
>
> *Wach* v. *Coe,* 77 F. (2) 113, 115,
> *Lucke* v. *Coe,* 69 F. (2) 373, 383,
> *Hurd* v. *Coe,* 17 F. Supp. 312, 315.

In making these rulings this Court followed the decisions of the Supreme Court of the United States, among others,—

> *Seymour* v. *Osborne,* 11 Wallace, 516, 555,
> *Eames* v. *Andrews,* 122 U. S. 40,
> *Diamond Rubber Co.* v. *Consolidated Tire Co.,* 220 U. S. 428, 435,
> *Hobbs* v. *Beach,* 180 U. S. 383, 392,
> *Loom Co.* v. *Higgins,* 105 U. S. 580, 591,
> *Gould v. Rees,* 15 Wallace, 187, 189.

In *Parkes* v. *Booth,* 102 U. S. 96, 104, the Supreme Court condemning such a mode of creating an anticipation, remarked:

> "If such a defense were allowed not one patent of the kind in a thousand of modern date could be held valid."

TOPLIFF *v.* TOPLIFF.

The leading case on the subject of anticipation by reconstruction or building up, undoubtedly is:

> *Topliff* v. *Topliff,* 145 U. S. 156, 161,—
>
> "While it is possible that the Stringfellow and Surles patent might, by a slight modification, be made to perform the function of equalizing the springs which it was the object of the Augur patent to secure, that was evidently not in the mind of the patentees, and the patent is inoperative for that purpose. Their device evidently approached very near the idea of an equalizer; but this idea did not apparently dawn upon them, nor was there anything in their patent which would have suggested it to a mechanic of ordinary intelligence, unless he were

examining it for that purpose. *It is not sufficient to constitute an anticipation that the device relied upon might, by modification, be made to accomplish the function performed by the patent in question, if it were not designed by its maker, nor adapted, nor actually used, for the performance of such functions.*"

Later applications of the doctrine of *Topliff* v. *Topliff* include, among others,

> "A device relied upon for anticipation is not sufficient, *if it requires modifications* to make it accomplish that which is to be performed by the patent in suit. It may not be *redesigned, even by its maker,* so as to make it adaptable for the performance of functions accomplished by the new invention. *Topliff* v. *Topliff,* 145 U. S. 161."
>
> *Babcock & Wilcox Co.* v. *Springfield Co.,* 16 F. (2) 964, 969, C. C. A. 2.

> "And a patent otherwise valid is not void for anticipation because a prior patent covers a device which *might be so constructed as to be capable of the same use as that of the later patent,* where the prior art gives *no suggestion* that such use was contemplated, and no specific directions for such construction."
>
> *Nelson* v. *Myers,* 25 F. (2) 659, 662, C. C. A. 6.

> "It is true that, *with certain changes,* the Alexander device might be made closely similar to the devices of Garland and of Bowers; but in considering prior patents as anticipations, *it is not permissible to modify the structures disclosed by patents, and then claim the modified structures as anticipations.*"
>
> *Diamond Corp.* v. *Bayer Co.,* 13 F. (2) 337, 341, C. C. A. 8.

> "Anticipation is not made out by the fact that a prior existing device, shown in a prior patent, *may be easily changed so as to*

> *produce the same result* as that of the device of the patent in suit where the *prior device was in common use,* without it occurring to anyone to adopt the change suggested by the patent in the suit." (Cases)
>
> *Bankers Co.* v. *Pacific Bank,* 18 F. (2) 16, 18, C. C. A. 9.

> "Prior structures which by modifications might be made to perform functions of a later one patented are not anticipations *where not designed, adapted to, nor used for such functions,*"
>
> *Dinuba Steel Products* v. *Killefer,* 56 F. (2) 848.

Even if by enlarging the bearing plate 5 of Taft and the concave washer L of Marcy a device could be produced that would accomplish the results of plaintiff's invention, it would be manifestly improper to hold plaintiff's claims 9 and 10 void for anticipation by, or lack of invention over, Taft and Marcy, either with or without reference to Peterson, for the reason, if for no other, that there is no suggestion in Taft or Marcy that such modification of the bearing plate or washer would be effective for producing plaintiff's result.

It is evident the Examiner and the Board overlooked the following decision which is very much in point,—

> "The applicant's defined structure is new and it seemes to me that in order to negative invention it is necessary to find in the prior art not merely a device that might be modified to make this construction, but somewhere a suggestion, not only that the modification ought to be made, but how to make it."
>
> *Ex parte Gee,* 1919 Commissioner's Decisions, 49, 51.

THE EIBEL PROCESS CASE.

The factual situation before the court presents the closest imaginable analogue to that before the Supreme Court in:

> *Eibel Process Co.* v. *Minnesota & Ontario Power Company,* 261 U. S. 45,

and therefore it is respectfully submitted that the doctrine of the Eibel case is decisive of the case at bar.

In the Fourdrinier paper making machine there is an endless wire cloth sieve known as the paper making "wire" which passes over a series of rolls and receives a constant stream of paper making stock of wood pulp mixed with water. Prior to the date of Eibel's invention the "wire" was horizontal although it had sometimes been tilted by raising its rearward end about *three inches.*

Eibel's improvement consisted in raising the rearward end of the wire *twelve inches.* This elevation was defined in claim 1 as "substantial". He gave the wire this substantial elevation for a certain *definite* purpose, a purpose quite *different* from that for which the small or trivial elevation of three inches theretofore had been made.

Claim 1, which was sustained by the Supreme Court, is:

> "1. A Fourdrinier machine having the breast-roll end of the paper-making wire maintained at a substantial elevation above the level, whereby the stock is caused to travel by gravity, rapidly, in the direction of movement of the wire, and at a speed approximately equal to the speed of the wire, substantially as described." (Page 50 of 261 U. S.)

The Supreme Court said:

> "The Eibel invention is distinguished from the prior art in two ways, first, in that the *pitch* of the wire was for a *different purpose* to be accomplished . . . and, second, by the fact that to achieve his purpose *a high or substantial pitch* must be given to the wire, while only *a small or trivial pitch* was needed for the drainage of the prior art." (Page 58 of 261 U. S.)

The "Statement of the Case" preceding the opinion (46–51 of 261 U. S.) explains the structure of the Eibel patent and the result sought to be accomplished.

Eibel's solution of the problem before him was eminently successful and was adopted by the industry.

The Court of Appeals, 1st Circuit, held that Eibel's achievement was a mere difference in degree of the use of a prior art principle (*Minnesota & Ontario Paper Co.* v. *Eibel Process Co.*, 274 F. 540), but the Supreme Court did not accept this view chiefly because Eibel's invention was a result of a *novel conception.*

Appellant's conception was novel. He first perceived that it would be desirable

(a) To preflex the heads inwardly by an amount sufficient to counteract the outward pressures exerted on them by yarns of different types so that by such outward pressures the heads would be restored to their normal positions at right angles to the barrel;

(b) To arrange matters so that if said outward pressures were insufficient to bring the heads back to normal position, the inward pressures exerted against the outer faces of the heads could be slightly reduced in order that the heads could regain their normal position; and

(c) To arrange matters so that when the heads were properly flexed inwardly and the pressures exerted against their inner faces by the yarn restored the heads to normal position, and subsequently additional force should be exerted against the inner faces by the swelling of the yarn due to absorption of moisture, the operative could increase the pressures on the outer faces of the heads and so restore them to normal position.

The jack spool patents of which appellant had constructive knowledge and the jack spools on the market including those manufactured by his company (T. R. 25) obviously could not have suggested the means for carrying his brilliant conception into effect; but even assuming that the jack spools might have suggested the invention, it must be clear that such invention was not a "mere carrying forward of an original patented conception, involving only change of form, proportions, or degree, or the substitution of equivalents, doing the same thing as the original invention by substantially the same means (*Dunbar* v. *Meyers,* 94 U. S. 187, 199), but was the result of the exercise of a high degree of ingenuity,—a flash of genius or inspiration,—and constituted a display of imagination far beyond the reach of a mere artisanship.

His concave metal discs *substantially* larger in diameter than the barrel were for a *"different purpose to be accomplished"*, in the language of the Supreme Court, Eibel case, page 58 of 261 U. S.

The practical test of invention is objective, not subjective. It does not "assist us to substitute for the brain of the patentee whose idea we are criticizing the brain of that imaginary person of the patent law, the skilled mechanic . . . the true test of invention is the novelty of the *result* and this result must be criticized by comparing it with the machines . . . before known. The test is an objective one". (Lowell, J., in *Submarine Signal Corp.* v. *General Radio Co.*, 14 F. (2) 178, 180–181.)

SUBSTITUTION OF EQUIVALENTS.

Each of the claims in suit is for a section beam.

As we have already seen a section beam (sometimes called a "warper beam") cannot by any stretch of imagination be considered the equivalent in structure, function or end sought, of a jack spool.

Neither the bearing plate 5 of Taft nor the washer L of Marcy is the equivalent of plaintiff's disc 27 because they do not, and are not intended to, perform the same function as plaintiff's discs nor is either of them the equivalent of the disc 3 of Peterson which, as aforesaid, is an integral part of a truss structure.

Neither the jack spool patents nor the Peterson patent discloses the combination set out in the appealed claims and therefore it was contrary to all the decided cases to hold said claims void on the ground that an element of one patent (Peterson) could be substituted for an element in either of the others. This was "building up or reconstruction", or baldly and arbitrarily ruling: "No invention", a defense that is not accepted by the Courts where a difficulty in an art has been cured by a device brought out *long after the problem was recognized* and *long after others had attempted unsuccessfully to remedy such difficulty.*

To anticipate a combination claim, the combination in its entirety must be old.

Bristol v. *Otis Elevator Co.*, 52 F. (2) 772, 773, C. C. A. 3,
Anderson v. *Hanky*, 57 F. (2) 167, 170, C. C. A. 2,
Metropolitan Device Corp. v. *Williamsburg Elec. Supply Co.*, 19 F. (2) 442, C. C. A. 2,
Block v. *Nathan Anklet Support Co.*, 9 F. (2) 311, C. C. A. 2.

> "None of them discloses the *combination* of Froslid, and it is no defense to a claim of an infringement that *one or more elements of a patented combination, or one or more parts of a patented improvement, may be found in one old patent or publication, and others in another, and still others in a third.* It is indispensable that *all* of them, or their *mechanical equivalents,* be found in the *same description* or machine, where they do the *same work* by substantially the *same* means."

Owens v. *Twin City Co.*, 168 F. 259, 265, C. C. A. 8,
Hurd v. *Coe*, 17 F. Supp. 312, 315.

THE CLAIMS.

In addition to the limitations in the claims whereby they distinguish from the Peterson patent as hereinbefore set out (p. 21, *supra*), they differentiate from the impossible built-up or reconstructed structures suggested by the Board, as follows:

Each is limited to a "section beam" which as above explained is not even analogous to a jack spool. No claim in any patent or application can be considered as a set of words isolated from the subjoined context and each must be construed in view of the specification and drawing, for otherwise there would result rejections of the nature recited in the serio-comic decision of Mr. Commissioner Liggett 66 years ago in:

Ex parte Moore, 1871 C. D. 249,

viz., a fine tooth comb rejected on reference to a patent for a picket fence, etc. etc.

The meaning of the word "substantially" in each claim qualifying the word "larger" must be ascertained from the specification and when the latter is consulted it will be clear that the disc 27 must be from about 1/3rd to about ½ larger in diameter than the barrel. Making it less than about 1/3rd larger would not suffice. Making it larger than about 50 percent greater would not improve the result sought.

> "Many a claim to a device has been sustained because its reference to its *purpose* or *use* was thought enough to distinguish its patentability from earlier devices, which would be covered by its otherwise too broad words of structural description."
>
> *Lakewood Engineering Co.* v. *Walker*, 23 F. (2) 623, C. C. A. 6, Foot-Note #2 and cases cited therein.

In this decision the Court said at page 624:

> "Between these devices and the one patented there is such a difference in *size, strength, weight,* and in *purpose* and *manner of use,* that they furnish no *effective suggestion* of either the means or the result which Walker accomplished."

Such as has been attempted to be pointed out is the situation in the instant case with respect to the jack spool patents.

This Court in:

In re Weiss, 21 App. D. C. 214,

reversed the Patent Office tribunals because it was error to cite a fastening device for securing letters to store signs against claims on means for fastening initials to finger rings.

In both of these cases there was not as much difference between the devices before the Court and those of the prior art as there is between a jack spool and a warp beam, insofar as "effective suggestion" is concerned.

In:

Bredin, et al. v. *Solmson,* 132 F. 161, 163,

Judge Morris of the Circuit Court for the District of Maryland sustained a claim for a metallic weather strip having a central raised rib at right angles to a flat base over the prior art showing a door runway of metal having a rib centrally placed and a base on each side, on the ground that its "*use* is so different and the *purpose* so different" that he could not "see that the one would suggest the other, *and in point of fact it would appear that it never did*".

This Court in:

In re Ek, 19 F. (2) 677,

reversed the Commissioner of Patents because the invention sought to be patented was not clearly disclosed in a foreign patent. The Court said:

> "The Commissioner turns his decision on the drawing which inartificially discloses a *shorter* flap. A reference to the drawing, however, clearly discloses that the shorter flap was not regarded as an element of importance . . . indeed, *there is nothing in the Chemin patent to suggest the advantage or disadvantage of the shorter flap.*"

And this is precisely the situation at bar with respect to the lack of disclosure of the relation of the diameters of the discs and barrels in the jack spool patents.

The Court at page 678 in Sec. (2) of its opinion, citing a well known decision which in turn was based on other well known and often quoted cases, said that:

> "A foreign patent is to be measured as anticipatory not by what might be made out of it but by what is clearly and definitely expressed in it"

and there is no reason whatever for limiting this rule to foreign patents because it is applicable to United States patents and printed publications, either foreign or domestic, as well as to instances of prior knowledge and use.

There is a further limitation in each of the appealed claims that cannot be disregarded and that is the "whereby" clause which in itself takes the claims completely away from the jack spool patents. A few of the many cases ruling that a "whereby" clause is a limitation that may not be disregarded either in the determination of patentability or infringement, follow:

Lovell v. *Johnson,* 91 F. (C. C. A. 1) 160, 161,
Thomas Meter Co. v. *National Meter Co.,* 106 F. (C. C. N. Y.) 519, 530,
Computing Scale Co. v. *Keystone Store-Service Co.,* 88 F. (C. C. Pa.) 788, 789–91,
E. & H. T. Anthony Co. v. *Gennert,* 108 F. (C. C. A. 3) 396, 398,
Crane Co. v. *Baker,* 125 F. (C. C. A. 7) 1, 3,
Perfection Spring Service Co. v. *American Auto Heater Co., Inc., et al.,* 236 F. (D. C. W. D. N. Y.) 256, 258,
E. H. Freeman Elec. Co. v. *Weber Elec. Co.,* 262 F. (C. C. A. 3) 769, 771, Affirmed, 256 U. S. 668, 670, (*Weber Co.* v. *Freeman Co.*).

COMMERCIAL SUCCESS.

While commercial success is not a substitute for invention, it has always been held to be a "powerful piece of evidence" on the question of patentability,

Kurtz v. *Belle Hat Lining Co.,* 280 F. 277, 281, C. C. A. 2,

"especially when the prior art shows no success along the same lines",

David v. *Harris,* 206 F. 902, 904.

The industry took kindly to plaintiff's invention practically from the beginning, and from 1931 to 1936, both inclusive, 10,550 beam heads, substantially identical with the head shown in Fig. 3 of plaintiff's application, were sold (T. R. 22).

This court has held that evidence of great utility may sometimes be accepted as evidence of invention.

In:

Wach v. *Coe,* 77 F. (2) 113, 115,

this court quoted from *Paramount Publix Corp.* v. *American Tri-Ergon Corp.,* 294 U. S. 464, as follows:

> "Where the method or device satisfies an old and recognized want, invention is to be inferred, rather than the exercise of mechanical skill. *For mere skill of the art would normally have been called into action by the generally known want.*"

See also:

Lucke v. *Coe,* 69 F. (2) 379, 383, and
Davies v. *Coe,* 83 F. (2) 602, 603.

CONCLUSION.

Appellant has "converted imperfection into completeness and produced the first practical and commercially successful" warp beam which is capable of general use under any and all weather conditions, irrespective of the weight and size of the yarn to be carried thereon, and renders unnecessary the use of the expansion comb (*Wagner* v. *Wykoff,* 151 F. 585, 589–90, C. C. A. 2). The invention was received enthusiastically by the industry.

The opinion of the Court of Appeals for the Third Circuit in:

Hartford-Empire Co. v. *Hazel-Atlas Glass Co.,* 59 F. (2) 399, 413,

is most apposite:

> "Where an art, eager for relief, found in these moribund patents nothing to meet that suggested solution, it is safer to rely evidentially on the then judgment, attitude, and conduct of the glass trade rather than on the post litem testimony of experts, the contentions of infringers, and the *theoretical construction that often tempts courts to create out of lifeless patents an imaginary machine on paper which a working art could not do in steel.*"

As this Court has held repeatedly, all doubt should be resolved in favor of the patent applicant.

In re Schrubstadter, 26 App. D. C. 331,
In re Thompson, 26 App. D. C. 419.

After the foregoing had been written, it was the privilege of appellant's counsel to read the decision of this court in:

Paul Kollsman v. *Conway P. Coe,* Decided Sept. 13, 1937 and printed in 35 U. S. Patents Quarterly 47, Adv., October 9, 1937.

At page 55 of 35 U. S. P. Q., the Court said:

> "It has also said that where there are, as here, concurring decisions of the patent tribunals, the court should be convinced beyond a reasonable doubt before reversing them that if a patent had been granted the court would upon the same record sustain it under attack."

Unfortunately, appellant's counsel in his examination of the law preparatory to writing this brief did not find the prior decisions of the court where the foregoing view was asserted.

Incidentally, it might be remarked that in every appeal to this court from the decree of the United States District Court for the District of Columbia in a suit under Sec. 4915 of the Revised Statutes to authorize and enjoin the Commissioner of Patents to issue a patent (except of course in interference cases) there are always concurring decisions of the Patent Office tribunals and said District Court.

It would therefore seem that said ruling means that in every such appeal (except interference appeals) the test laid down by this court is whether or not a patent granted on the application at bar, if before the court on the same record in a patent infringement suit, would be held valid.

In other words, this court clearly ruled that there is but one test of patentability,—not two, one for the Patent Office, depending in large part upon what that legal fiction the "man skilled in the art" might or might not have done in view of the prior art, and one for the courts, depending chiefly upon whether or not a new result has been obtained.

This view was repeatedly asserted in this case before the Patent Office and the District Court. It has been asserted also by the writer in other cases before the Patent Office but never with success because the Patent Office always replied that the presumption of validity attaching to the grant of a patent,—the most easily rebuttable of all legal presumptions,—makes the tests laid down by the courts inapplicable to the determination of the question of patentability in the case of a pending application.

It is asserted with confidence that if a patent had been granted on this application and an infringement suit brought in the United States District Court for the District of Columbia on the two claims now before this court, the District Court would have held said claims valid on the record now before this court, and that this court on appeal would have affirmed the decree of the trial court, all for the reason that appellant having accomplished a new and useful result was entitled to the monopoly defined by the appealed claims construed, in order to ascertain their meaning and scope, in view of the specification and drawings, the file-wrapper and contents and the prior art.

The equities are all in appellant's favor, and on principle and authority the decree of the court below should be reversed.

Respectfully submitted,

GEO. K. WOODWORTH,
WM. L. EDMONSTON,
Counsel for Appellant.

FOR MR. JUSTICE EDGERTON

No. 7009

In the United States Court of Appeals for the District of Columbia

OCTOBER TERM, 1937

RAY U. THORNTON, APPELLANT
v.
CONWAY P. COE, COMMISSIONER OF PATENTS,
APPELLEE

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

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In the United States Court of Appeals for the District of Columbia

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CONWAY P. COE, COMMISSIONER OF PATENTS, APPELLEE

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

This is an appeal by the plaintiff below from the decree of the District Court of the United States for the District of Columbia dismissing a bill filed under the provisions of Section 4915, R. S. By that bill it was sought to have the Commissioner of Patents authorized to issue to plaintiff a patent containing two claims, numbered 9 and 10.

Appellant's application, No. 622,059, filed July 12, 1932, was for a patent on a Section or Warper Beam. Such a beam is described in a patent stated to have been issued to appellant's father, namely, patent No. 1,239,744 (R. p. 93), in which the beam is described as follows:

> My invention relates to section-beams used for storing and transporting warp and filling, and more particularly to the construction of the flanges or heads of such beams.

The application in suit disclosed two features differing from that of the prior Thornton patent, namely, the means for fastening the heads to the barrel of the beam, and the means for bracing the heads. Claims were ~~allowed on the former~~ and the latter is the subject-matter of the claims ~~here on appeal~~.

These claims read as follows:

> 9. A section beam comprising a shaft, a barrel and a pair of heads mounted on said shaft, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter and in threaded engagement with said shaft, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel, and means for locking each said disc against axial movement with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.
>
> 10. A section beam comprising a barrel, a shaft passing through the same, and a pair

> of heads mounted on said shaft, the ends of said shaft extending beyond said heads, a pair of discs each engaging the outer face of one of said heads and being independent of and separable from the latter, each said disc being convex outwardly with respect to the head adjacent thereto and each being substantially larger in diameter than said barrel, and means for locking each said disc against axial movement with respect to said shaft, whereby said heads are prevented from spreading when the beam is filled with yarn.

The structure involved is briefly described in the application as follows:

> Referring to Fig. 3 the flanged sleeve or hub 22′ does not pass through the head but is cut off flush with the outer face thereof and the ends of the shaft are threaded to receive the stiffeners 27 shown in the present instance as concave discs, preferably of resilient material; for example, hot rolled steel. Each disc is arranged with its convex surface outward with respect to the adjacent head and is slightly larger in diameter than the barrel. For example, if the barrel is 10″ in diameter, the stiffener discs may be from 13″ to 15″ in diameter. By means of a spanner wrench taking into the holes 28, each disc may be turned up against the head with the necessary force to prevent the spreading of the outer peripheral portions of the latter and is held in adjusted

> position by the lock-nuts 29, said nuts 29 also serving as spacers when the beam is put on its own trunnions.

The brief for appellant is very long, cites many decisions, and presents the case from a number of aspects.

However, the question in issue here is a very simple one.

Appellant was not the first to discover that the head of a warper beam may be pushed out of a position perpendicular to the shaft. That defect had been recognized and described in the patent to Peterson, No. 1,484,154 (R., p. 98 et seq.). In that patent the warper beam is shown as having a head composed of a metal disk and a bracing disc coaxial with the head of the beam and riveted thereto at various points around its circumference. That bracing disc is not only riveted to the head of the beam, but it is fastened on the shaft with a spacer sleeve between it and the head of the beam. In appellant's case the bracing disc is movable on the shaft and is not attached to the head of the beam. It is so threaded to the shaft that by turning it with a spanner wrench the beam head can be forced into position perpendicular to the axis, or if necessary slightly dished inwardly to compensate for the pressure of the yarn wound upon the beam if that yarn has absorbed moisture from the atmosphere.

The patents to Marcy, 455,224, and Taft, 1,490,864 (R., pp. 112 et seq., and 115 et seq.), show jack spools in which there is a disc threaded upon the shaft in the Marcy patent and placed against a shoulder on the shaft of the Taft patent and resting against the head of the spool.

The question for consideration, therefore, is whether when the difficulty arising from the outwardly spreading of the head of the beam had been noticed, there was any invention in placing against that head a bracing disc such as shown in the Marcy and Taft patents in lieu of the bracing disc of the Peterson patent.

That was the question which was resolved against the appellant both by the tribunals of the Patent Office and by the Court below. The question, as stated by the Board of Appeals in its decision (R., p. 83), was whether there was any invention in making the discs of the Marcy and Taft patents of still greater diameter in view of the disclosure of the Peterson patent.

In its decision the Board of Appeals, on page 83 of the Record, made the following statement:

> Applicant urges that the concaved disks in Marcy and Taft are not of sufficient diameter to accomplish his function of laterally bracing the head. The examiner points out that the disks are clearly shown as being of greater diameter than the barrel and there is no reason for supposing that the showing in this respect is not intentional. However this may be, it clearly follows from the disclosure of the disk 3 in Peterson that no invention would be involved in making

> the disks in Marcy and Taft of still greater diameter than illustrated in these patents. It also seems clear to us that no invention would be involved in the provision of a single central shaft in lieu of the two stub shafts or spindles illustrated in these patents to Marcy or Taft in view of the disclosure of the shaft C in Peterson. Applicant's arguments have been carefully considered but we are persuaded that the two claims on appeal are not allowable over the references relied upon by the examiner.

As always in the cases of this type the question is one as to the teaching of the art. Both of the lower tribunals of the Patent Office were of the opinion that the teaching of the art was sufficient to negative invention in view of the references above referred to. In the court below testimony was presented which was carefully considered by the court but the conclusion was reached that there was no error in the holding of the Patent Office.

In his brief, appellant seems to have made much of the quotation from the specification that the disc is slightly larger than the diameter of the barrel of the beam. Exactly what was said reads as follows:

> Each disc is arranged with its convex surface outward with respect to the adjacent head and is slightly larger in diameter than the barrel. For example, if the barrel is 10″ in diameter, the stiffener discs may be from 13″ to 15″ in diameter.

It would seem immaterial whether the proper word for appellant to have used was "slightly" or "substantially" for in either case the discs shown in the Marcy and Taft patents are larger than the barrel and in the Peterson patent the bracing disc is very materially larger than the barrel.

In his brief (R. p. 32) appellant seems to lay considerable stress on the fact that no evidence was introduced on behalf of the defendant, the Commissioner of Patents. The statement is made that the "defendant elected to rest on the Patent Office record and put in evidence the decision of the Board of Appeals." No presumption can be drawn in this case from the fact that evidence was not introduced on behalf of defendant other than the records of the Patent Office, for that is the manner in which all these cases coming up under the provisions of Section 4915, R. S., have been tried. The Patent Office never introduces any evidence except the Patent Office record.

It is submitted that the decree of the lower court should be affirmed.

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Attorney for Appellee.

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v.

CONWAY P. COE,
Commissioner of Patents.

REPLY BRIEF FOR APPELLANT.

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REPLY BRIEF FOR APPELLANT.

Appellee on page 4 of his brief considers the issue " very simple " and asserts that the Board of Appeals was right in its view that the Peterson patent (the only one that discloses a warper beam) is pertinent because it would suggest appellant's invention whereby there is effected a result incapable of accomplishment by the Peterson structure.

Appellee's brief shows a surprising misapprehension of the nature of the invention before the Court, for on page 4 thereof it is seriously stated as to the bracing disc that:

> " It is so threaded to the shaft that by turning it with a spanner wrench the beam head can be forced into position perpendicular to the axis, or if necessary slightly dished inwardly to compensate for the pressure of the yarn wound upon the beam if that yarn has absorbed moisture from the atmosphere."

Obviously the beam head normally is perpendicular to the axis of the beam. It is only when the beam is loaded that the outward pressure of the yarn mass " spreads " the heads outwardly.

Referring to pages 7, 10, 11, 16, 17 and 42 of appellant's brief, it will be seen that the functions of appellant's discs are:

1. To force the heads inwardly prior to winding the beam to a degree based on the type of yarn to be used, the degree of such flexing being a matter of experience and based on data supplied by the spinner to the manufacturer.

2. If such degree of preflexing inadvertently was insufficient to counteract the outward force exerted by the yarn mass on the heads, the manufacturer, after detecting such spreading, or the spinners, if the spreading was not discovered by the manufacturer, turn the discs further up against the heads and restore the latter to normal position, thereby correcting the inequality in the diameters of the central and end portions of the yarn mass.

3. If the degree of preflexing is excessive and the outward pressure exerted by the yarn mass is insufficient to restore the heads to normal position, the discs can be turned back slightly so that the inward pressure exerted on the heads by the discs can be slightly reduced and thereby the heads returned to normal perpendicular position.

4. When the heads have been properly preflexed (*i. e.*, when the outward pressure of the yarn mass is just sufficient to counteract the inward pressure of the discs against the heads so that the heads of the loaded beams are in normal perpendicular position) and then the yarn mass, on account of absorption of moisture due to exposure by a humid atmosphere exerts sufficient force against the heads to cause them to spread, the spinner turns the discs further up against the heads and thus restores them to normal perpendicular position.

None of these results can be accomplished by the Peterson beam for the reason that the head thereof is a truss construction the members of which are rigidly connected together so that the disc 3 thereof is not "independent of and separable from" the heads as is appellant's disc 37.

Appellant has produced a universal warp beam that is adapted for use with yarn of any type and under all weather conditions. It was immediately accepted by the industry and is now in general use.

Peterson's warp beam is distinguished from the prior art by a truss made up of three pieces having the stiffness and strength of the solid cast-iron head mentioned in the preamble of the Peterson patent and was an improvement thereover in the sense that it was much lighter than said solid head. That it was not a successful solution of the problem clearly is shown by the Peterson and Corn affidavits.

Only 64 of such beam heads (32 beams) were made and only 50 (25 beams) were sold.

Respectfully submitted,

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